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No. 1

INSTRUCTION IN CITY SCHOOLS CONCERNING THE WAR

By CHARLES E. McCORKLE, Clark University

Being intensely interested in the stupendous importance and the far-reaching influence of the present European war, and knowing that some city superintendents as well as state commissioners of education maintain that all discussion and reference to the war should be avoided in connection with the public schools and that many more superintendents maintain that the war should be a vital factor in the school curriculum, the following syllabus was sent to city superintendents, state commissioners of education and various organizations in order to ascertain the use that the schools are making of the opportunity.

HOW TO TEACH THE WAR

My dear Superintendent,—

Shall the present European War be taught in the schools? How shall it be taught?

This most vital problem is now confronting every practical superintendent. Your answer will be greatly appreciated for this investigation.

Do you permit any discussions of the war by pupils? If so, what special precaution do you take to insure neutral attitude?

Do you believe it should be taught? Why?

How taught {
a. Class discussion
b. Lecture method
c. Map method
d. Current news
e.
f.

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How would you collect material for teaching?

How much time would you devote?

Can this recent European War be used to advantage in teaching the following, and if so, how would you proceed?

- a. Geography
- b. History
- c. Economics
Civics
- d. Society conditions (municipally, nationally and internationally)
- e. Universal peace.
- f. Hygiene
- g. Eugenics

In looking over the list of 257 city superintendents from whom information was requested, and after carefully considering the 148 superintendents who did not reply, a tremendously significant fact was at once connected with the tenure of office of many of these superintendents. Personally knowing several of these men and how they hold their positions, there is no question but that they feel they can not run the risk of losing votes or becoming unpopular by speaking for or against this as their pedagogic training and ability demands. In a matter of such importance and far-reaching influence as this, surely the "political game" must play an important rôle since it prevents a decided expression by a man in such an important position.

Answers were received from one hundred and nine city superintendents, from the United States Commissioner of Education and from twelve state commissioners of education. In these answers, thirty-nine different states are represented. The total population of all the cities from which replies were received, is 18,138,965 in which the total number of teachers employed is approximately 60,000.

In the list of cities given below, war is taught either as a separate subject, or with every possible school subject, or with history, geography, economics and hygiene. The horribleness of war and the spirit of peace are emphasized in the schools of all these cities. Likewise, it is the consensus of opinion of these city superintendents that the war is a great vitalizing principle in the teaching of text-book work.

The war is taught in the following 87 cities, having, in 1910, a population of 13,910,657.

Alliance, Ohio.	Bridgeport, Conn.	Cincinnati, Ohio.
Anderson, Ind.	Brockton, Mass.	Columbus, Ohio.
Athens, Tenn.	Buffalo, N. Y.	Columbus, Ga.
Aurora, Ill.	Cambridge, Mass.	Covington, Ky.
Baltimore, Md.	Canton, Ohio.	Cripple Creek, Colo.
Bayonne, N. J.	Cheyenne, Wyo.	Davenport, Ia.
Birmingham, Ala.	Chicago, Ill.	Des Moines, Ia.

Detroit, Mich.	Lancaster, Pa.	Reno, Nev.
Dubuque, Ia.	Lexington, Ky.	Richmond, Va.
East Orange, N. J.	Madison, Wis.	Riverside, Ill.
Elmira, N. Y.	Menominee, Mich.	Rock Island, Ill.
El Paso, Tex.	Meriden, Conn.	Rockford, Ill.
Flint, Mich.	Miles City, Mont.	San Bernardino, Cal.
Fort Smith, Ark.	Montclair, N. J.	San Francisco, Cal.
Framingham, Mass.	Muskegon, Mich.	Scranton, Pa.
Fresno, Cal.	Muskogee, Okla.	Seattle, Wash.
Goldfield, Nev.	Nashville, Tenn.	Sioux City, Ia.
Grand Rapids, Mich.	New Haven, Conn.	South Omaha, Neb.
Great Falls, Mont.	New Rochelle, N. Y.	Springfield, Ohio.
Hancock, Mich.	New York, N. Y.	Texarkana, Tex.
Harrisburg, Pa.	Newburyport, Mass.	Topeka, Kan.
Hibbings, Minn.	Newton, Mass.	Utica, N. Y.
Houston, Tex.	Oakland, Cal.	Waltham, Mass.
Jackson, Mich.	Ogden City, Utah.	Washington, N. C.
Jersey City, N. J.	Paterson, N. J.	Washington, D. C.
Johnstown, Pa.	Pine Bluff, Ark.	Waterbury, Conn.
Kansas City, Mo.	Portland, Me.	Webster Grove, Mo.
La Crosse, Wis.	Providence, R. I.	Whitler, Cal.
Lakewood, Ohio.	Pueblo, Colo.	Youngstown, Ohio.

In the cities in the next list some superintendents have asked their teachers to refrain from any mentioning of the war and to permit no discussion of the war by the pupils. However, some of the superintendents maintain that peace and sympathy may be mentioned and impressed at opportune times, but the war or the horror of the war should not be mentioned. Two cities have even dispensed with the teaching of current events.

In the following 22 cities, having, in 1910, a population of 4,228,308, the war is not taught.

Berkeley, Cal.	Hamilton, Ohio.	Reading, Pa.
Bloomfield, N. J.	Huntington, W. Va.	St. Louis, Mo.
Boston, Mass.	Louisville, Ky.	St. Paul, Minn.
Clinton, Ia.	McKeesport, Pa.	Salt Lake City, Utah.
Dayton, Ohio.	Muncie, Ind.	Spokane, Wash.
Eau Claire, Wis.	Norwood, Mass.	Waco, Tex.
Fort Wayne, Ind.	Philadelphia, Pa.	Yonkers, N. Y.
Fort Worth, Tex.		

The following summary indicates how 109 cities are making use of the war. However, some of these cities teach the war as a separate subject besides teaching it with other current topics, and some cities correlate the teaching of the war with school subjects and with current events, while some teach the war correlated with current events only.

Eighty-seven cities teach the war.

Twenty-two cities do not teach the war.

Eleven cities teach the war as a separate subject.

Twenty-six cities correlate the teaching of the war with history and geography.

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Eighteen cities correlate the war with every possible school subject.

Twenty-three cities correlate the war with current events only.

Twenty-eight cities teach the war but not current events.

Two cities teach neither the war nor current events.

Seventy-eight cities teach current events.

Sixty-two cities have a definite time for the teaching of the war.

Twenty-five cities teach the war unsystematically.

The time devoted by the different cities to the teaching of the war as a separate, a related or a correlated subject as the above indicates, is naturally classified into three groups. The first group of cities spends from ten to thirty minutes daily, the second from twenty minutes to one hour once per week, and the third group from ten minutes to twenty minutes twice per week.

The replies from twelve state commissioners of education indicate that eight believe the war should be taught, correlated with other subjects and used to vitalize text-book work. Three commissioners maintain that the war should not be taught, but that the events of the war might be used to advantage. And one says, "Have taken no action on the War."

Representative quotations from the state commissioners are as follows:

Payson Smith, State Superintendent of Education, Augusta, Me.:

"— the leading events of the present European War should be taught in the schools, the material to be taken from some standard weekly journal that reports in general the progress of the week. The teaching of the subject should be followed carefully by superintendents to indicate whether or not any individual teachers are unable to teach this work without bias."

Mason S. Stone, State Superintendent of Education, Montpelier, Vt.:

"— I believe in teaching about the war but not in anyway creating partisanship. The present war may be used to advantage in teaching geography, history and the like."

C. G. Shulz, State Superintendent of Education, St. Paul, Minn.:

"No doubt the European War is taught, or at least discussed in a number of public schools in Minnesota. When taught it should be without prejudice or bias, for or against either side. Many useful lessons in geography, history and economics and touching social conditions can be illustrated by discussion of the war situation."

C. H. Lugg, State Superintendent of Education, Pierre, South Dak.:

"— in my judgment this war has not yet progressed to a stage where any profitable history of it can be taught, owing to our lack of information concerning the movements now in progress. I think that as a preparation for its study later a review with the class

of Official Documents bearing upon the European War which have been collected and published in pamphlet form by the American Association for International Conciliation might be helpful."

Charles A. Greathouse, State Superintendent of Education, Indianapolis, Ind.:

"I do not believe the present European War, as such, should be taught in the schools, but I am of the opinion that the events can be used in connection with other work, and general ethical problems touching upon peace questions."

Valentine Almy, Assistant Superintendent of Education, Rhode Island:

"Altogether too much time given now to the teaching of battles, campaigns and wars."

A part of the reply of Dr. P. P. Claxton, United States Commissioner of Education, is as follows: "If I were to give advice to superintendents and teachers on this subject I would caution them against believing that the events of the war as occurring from day to day are especially helpful in teaching the geography of Europe. Geography should be taught in the schools as a science and must have its own method and order of development. These events, however, do offer most excellent opportunity for the application of principles of geography, illustrating how geographical features determine boundaries, location of highways, positions of cities, etc. I should also want them to present the whole matter in such way as to cause them to see clearly the folly and crime of all international wars."

Thus far, it has been the purpose to show the extensiveness of this investigation, the value of the information received and a general idea of what is really being done with the European war in the public schools of the United States. However, let it be clearly understood that this investigation and the conclusions on the same are based absolutely upon the one hundred and nine cities from which replies were received. No assumption is made in this work that the same proportion of cities and population where it is maintained "War should Be Taught," will be the same for all the rest of the cities which did not reply and from which no information was asked.

WAR SHOULD NOT BE TAUGHT

In order that a clear conception may be had of the decisions of the city superintendents who maintain that "War Should Not Be Taught," representative quotations from letters and reports are herein given:

Acting Superintendent H. C. Jacobs, Philadelphia, Pa.:

"Not now."

F. L. Wiley, Secretary to Superintendent, St. Louis, Mo.:

"The European War is not taught in the St. Louis Public Schools. While such instruction would, of course, give great opportunity for valuable emphasis upon geography, history and other subjects men-

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tioned in your circular inquiry, it is felt here that other major interests of the war make the discussion of the subject in the schoolroom inadvisable."

Superintendent F. B. Dyer, Boston, Mass.

"The greatest tragedy in the history of the world is now being enacted. Nearly all of us have an ancestry reaching back into the nations involved and it is but natural that we should be deeply moved. Nevertheless all excitement resulting from the events of the war should be kept out of the schoolroom and the regular schoolwork should be carried on under as nearly normal conditions as possible."

Superintendent D. Lange, St. Paul, Minn.:

"I do not think that the present European War can be taught to any advantage in our public schools, at least not in the schools of this part of the country, for the following reasons:

1. I do not wish to foster the war spirit in our boys.
 2. Our people in general, including our teachers and our newspaper writers, have such a slight acquaintance with European conditions that it would be impossible to have the facts presented impartially.
 3. The public schools are in great danger of being overloaded with anything and everything which for a time monopolizes the public interest. We must have some time to teach school if we are going to satisfy ourselves and satisfy the public.
 4. We have not forbidden teachers referring to the War, but we do not make a study of it.
 5. A good many of our teachers in the upper grades and in the High Schools do pay some attention to current subjects, but we have no systematic authorized course."
-

Superintendent E. J. Brown, Dayton, Ohio:

"a. Our belief in 'Peace.' b. Children of all nationalities in our schools. Wish to offend none. c. President's proclamation of neutrality of speech as well as action. Unreliability of news."

Superintendent Bruce M. Watson, Spokane, Washington:

"— in my opinion children are hearing as much as they ought to hear about the European war at the present time. There is no definiteness to any of our information to make it worth while to attempt to teach the war at present. Let us wait until it becomes history."

Superintendent Charles S. Foos, Reading, Pa.:

"I have issued a bulletin requesting the teachers to make no reference to the war whatever, but to impress the thought of 'Peace on earth and good will toward men.'"

Superintendent D. H. Christensen, Salt Lake City, Utah:

"It should not at present. 1. Because I am unable to discover any possible profit and I see much harm. 2. We have no reliable information on which to base instruction. There's no hurry."

Superintendent J. N. Study, Fort Wayne, Ind.:

"No, not when there are diverse nationalities represented."

Superintendent J. B. Richey, McKeesport, Pa.:

"So cruel, so uncalled for, so barbarous, so heathenish, so, so, so . . . Let us try to forget it."

Superintendent W. M. Foulk, Huntington, W. Va.:

"At present no,—emphatically no ——. Upon what authentic information can instruction be based at this early, unsettled stage of hostilities?"

Superintendent Austin H. Fitz, Norwood, Mass.:

"War is the worst of all crime and therefore ought not to be taught. To teach about any crime is to focus attention upon it and therefore to stimulate its commission.

"Webster defines a crime as an offense against the public welfare. This is substantially the definition of a crime as taught in the Harvard Law School. Certainly war comes within this definition.

"Time was when hangings were public. Crime did not decrease, however, because the publicity acted as a stimulus to the commission of crime. The war can be used to advantage in the teaching of history and geography from the view of making the teaching of those subjects more effective but it ought not to be so used. The harm outweighs the good. The teaching is about the war."

In defense of some of these superintendents, it is only fair to say that some might maintain that certain events and facts of the war should have a correlative value with some of the school subjects. However, from an educational viewpoint, the following is an endeavor to summarize the strongest and most logical reasons and conclusions of the city superintendents in general in regard to the war.

Inasmuch as the best methods of procedure in the public schools regarding the teaching of the war are uncertain, the relative values of such teaching are questionable and the results are still more questionable. The best and safest plan is to proceed along the old safe and tried pathway. For what can be obtained by a discussion of the European war? To discuss the unknown causes of the war, the inaccurate information, the battles waged, the victories and reverses of the contending nations and the like, will be but to give attention and time to that which later and authentic facts will prove to be wrong in the majority of cases. At present even historians and scholars themselves differ greatly as to the causes of this war. If such learned men are driven oftentimes to a state of frenzy through national prejudice and racial influences, how can untrained, "more passionate schoolmen," teachers, and pupils of all nationalities mingled together, make a critical study of the war? Suppose such were the outlined course and the endeavor were made to teach the war, whence the material for this study? The various newspapers, magazines, etc., or the majority of them, are published for the

sole purpose of moulding public opinion. The real facts and truths of the dreadful war are under the strictest censorship. The daily official communications from the various nations are but a series of contradictions. Little value, unless it is a negative one, can be obtained by distracting the attention of pupils from their regular class work, by inflaming their imaginations with the personal experiences of a few war motor cyclists, Zeppelin and aeroplane adventurers and atrociously bloody battles.

In brief the diverse nationalities, the avoidance of public feeling and possible public contention, the unreliability of the news, the biased and wrong judgments formed by immature minds, the lack of real facts to judge properly, the poor judgment on the part of many teachers, the teaching of crime begetting crime, the horror and cruelty of the war, are the reasons in full or in part why some superintendents claim "war should not be taught" in the schools.

WAR SHOULD BE TAUGHT

In order to prevent a radical opposition and a biased disposition on the part of anyone to this phase of the question, it is quite necessary for all to have a broad comprehension of what is meant by "teaching the war." With this suggestion in mind, quotations from those superintendents who maintain that the war should be taught, will now be given.

Superintendent W. H. Maxwell, New York City, N. Y.:

"In at least one of our sister cities, if we are to believe the newspapers, all mention of the war is forbidden in the classroom. Even the teaching of the geography of Europe is forbidden while the war lasts. I have no sympathy with a position of this kind. Children who have reached the age at which they can read the newspapers are neither made nor kept virtuous by preserving silence in the classroom regarding what they and all the rest of the world know, at least vaguely, and beyond a doubt ignorantly."

Superintendent F. A. Soper, Baltimore, Md.:

"I think it is important to follow the war as it develops. This war is in the living present and involves stupendous issues. It will therefore appeal to the minds of the children in a powerful degree."

Assistant Superintendent O. G. Frederick, Detroit, Mich.:

"— such important world news as the present war must be discussed in the schools and the wise teacher will see to it that the historical, geographic and economic aspects of the war are treated without animosity or personal bias.

I do not see how any teacher can refrain from enforcing the doctrine of Universal Peace by pointing out the awful cost of the present war in lives, in works of art, in commerce and industry."

Superintendent Alfred Roncovieri, San Francisco, Cal.:

"The war is taught as a part of Current Events. All grammar classes have been asked to depart from the prescribed Course of Study in geography and take up the map of Europe. We have cautioned the department not to express opinions on the merits of the war, not to refer children to the details of blood and massacre."

Superintendent E. L. Thurston, Washington, D. C.:

"I am watching the situation but have found so far that while there is considerable treatment of the matter in connection with current events, no case has risen to my knowledge in which any personal controversy has taken place, or any injury resulted from permitting the war to be a live topic."

Superintendent I. I. Cammack, Kansas City, Mo.:

"We are cautioning our teachers to be careful to maintain a strictly neutral attitude, and while they are at liberty to teach the facts, they are advised not to indulge in their own personal opinions in regard to the innocence or guilt of parties with reference to the War."

Superintendent I. O. Winslow, Providence, R. I.:

"Principals.—Please advise your teachers to avoid any discussion of the European War with their pupils or in their hearing, involving an expression of opinion favorable or unfavorable to any one of the contending nations."

Superintendent F. H. Beede, New Haven, Conn.:

"I have left this mainly to the good sense of the teachers, believing that the feeling of neutrality which prevails generally in this country, would be observed by our teachers in discussing this matter in the schools. . . . we should be omitting a most important opportunity for the animated study of geography and history, if the discussion of war topics were forbidden in the schools."

Superintendent J. H. Phillips, Birmingham, Ala.:

"— the European War is now the liveliest topic in the schools. Free discussion is permitted by pupils, but the teachers are enjoined to observe strict neutrality."

Superintendent John R. Wilson, Paterson, N. J.:

"Discussion of the 'War' by pupils has not been forbidden. No precautions have been taken to insure neutral attitude. Although Paterson is a city with a population of 130,000, in which there are many people of foreign birth, I am quite sure any discussion by school children is not at all likely to create any trouble."

Superintendent W. A. Greeson, Grand Rapids, Mich.:

"— the recent European War can be used to advantage in teaching geography, history, economics, social conditions, universal peace, and hygiene."

Superintendent F. E. Downes, Harrisburg, Pa.:

"Our advice has been consistently directed with the idea in mind that we are now making history and that the war should be taught—"

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Superintendent M. G. Clark, Sioux City, Iowa:

"Neutral attitude is maintained. It means a better understanding of geography and of European ideals and ideas."

Superintendent Alvin N. Cody, Flint, Mich.:

"We certainly do discuss the present European war in our schools. We try, however, to be perfectly fair in such discussion and draw many splendid lessons as to the final outcome and the possibility of universal peace. We have class discussions, something of the lecture method, and the maps. This is an opportune time to teach geography, history, economics, civics, and society conditions. It is also a great opportunity to study South American countries and to see how we might increase our trade with them since we are prohibited from trading with Europe to any great extent."

Superintendent David Gibbs, Meriden, Conn.:

"It is our duty to see that the older children understand the facts as far as known, so as more fully to realize the horror of war and the importance of peace."

Superintendent L. P. Benezet, La Crosse, Wis.:

"I have encouraged all of our principals and teachers of history to discuss the present European war, taking care that it is shown that whatever blame is to be fixed does not rest upon the peoples involved, but upon their rulers and upon the military casts among the nobility. I, myself, gave two lectures to our high school students, illustrated by maps which I made for the occasion, showing the ethnic divisions of Europe and how many wars have been caused by the attempt of so-called statesmen to divide the map of Europe without the slightest reference to the wishes of the people concerned."

Superintendent C. M. Bardwell, Aurora, Ill.:

"— in response to a popular demand, they have changed their plan and are now giving a very fair statement of the war news to date. I have visited a number of classes, . . . and I never have heard one word that would offend any partisan, nor have the teachers exhibited any partisanship. I believe that it will teach geography, that it will be an excellent background for the present and future study of history, and that it will promote universal peace."

Superintendent Wm. D. Parkinson, Waltham, Mass.:

"Teachers, of course, are inadequate to the task, but who is less inadequate? Teachers may need to be cautioned, and particularly to be instructed, but they do not need to be muzzled. It is even more necessary in the humbler institution than in the loftier to exercise one's freedom with common sense and self-restraint, but academic freedom is as vital to the public school as to the university. Let the teacher study civilization in the embryo and act accordingly."

Superintendent R. B. Dudgeon, Madison, Wisconsin:

"— notice should be taken of the European War . . . some discussion can be permitted in regard to the physical and political geography of the countries involved in this war. The general subject of Universal Peace should receive attention whenever occasion arises for its discussion."

Superintendent F. W. Conrad, San Bernardino, Cal.:

"Americans should not shut their eyes to the events of the greatest war of all times. Children should not be deprived of seeing the making of history now going on."

Superintendent Wilson M. Shafer, Cripple Creek, Colo.:

"It is folly to think that you can prevent the discussion of any matter so universally of interest to the American public and to the school public. I have found no action necessary other than to say to teachers, 'Be discreet and always insist upon temperance, toleration and the necessity for suspended judgment until we are certain we have all the facts upon which to base final conclusions as to matters of national guilt or responsibility.' The matter is discussed freely and frankly and opinions are not denied. I have had no single difficulty over this procedure. It is an opportunity for teaching so many lessons of value to our democratic school children."

Thus, as the above quotations indicate, eighty per cent of the superintendents claim that the war should be taught because of the lessons in tolerance, sympathy, philanthropy, judgment, character building, patriotism, horrors of war, universal peace, and in motivated geography, vitalized history, personal hygiene, comparative civics and economics, practical neutrality and social conditions. While not all these topics are taught in any one place, yet a good number of them are taught in most of the cities.

HOW TO TEACH THE WAR

Let it be clearly kept in mind that no endeavor is made to designate in a pedantic way, "this is the way to teach." Only suggestive features are herein given, which it is hoped will be of value to the wide-awake teacher. Although it is believed that the methods suggested are valuable and could be used to great advantage in practical teaching everywhere, yet local conditions, influences, environment, public sentiment, etc., are to be gauged by the good common sense of the teacher.

No claim is made that the various kinds of information taken from the different publications (newspapers, magazines, periodicals and war bulletins), are always authentic, but the claim is made that many publishers make an honest endeavor to give the best that is known, and that the best authorities are contributors to the same. Furthermore it is believed that approximate truths and enough valuable information can be obtained in their complex relationships to present and past conditions, so that nearly every subject in the public schools can be vitalized and motivated with new life, through which efficient and valuable work may be done.

Again, no claim is made that the public schools can teach the European war thoroughly, because this war is so great

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and comprehensive that if the greatest university in the world were to teach nothing but war and its stupendous relationships to past and present human activities and tendencies, it would find itself utterly swamped with material and unable to teach it properly.

Methods of Teaching

In every grade a short daily period should be devoted to the teaching of the war, especially from the fourth grade on through the high school. Special topics of interest may be assigned to the pupils on which they are to gather information from every possible source; in some places parents may even be asked to co-operate with their children in securing this material. During this period of teaching the war, regardless of the method used (class discussion, lecture method, map method or current news), a correlation may be intimated and a relationship shown to every school subject possible. This correlative teaching of the war may be emphasized, especially in history, geography, civics and economics, and hygiene. However, undue time should not be devoted to the war because one extreme is as bad as another.

The work should be systematized and organized with great care by the teacher. To illustrate, for a whole week pupils should gather information on the economic phase of the war and its relationship to the United States, from such sources as newspaper clippings, magazine articles, cartoons, maps (the *Times* War Maps, war manuals, magazine maps, and newspaper maps), and personal inquiry by students from bankers, business houses, manufacturing establishments, etc. In classifying the material, such clippings as the following should be placed under the heading: *Increase in Manufactured Products*,—"Chicago, Nov. 23,—British orders for more than \$15,000,000 worth of vehicles, automobiles, wagons, sleds, harness and equipment were brought back by Frederick S. Fish of South Bend, Ind.—England has also contracted for 500 automobile trucks from Kenosha, Wisconsin, firm, while the French government has ordered more than \$1,000,000 in automobiles from Jackson, Mich., factory.—Another wartime order made known today was a British order for 5,000,000 one-pound tins of corned beef."

The following clipping should be placed in the *Commerce* list under that of exports. "'I do not believe I am wrong,' says Romulo S. Naon, Ambassador from Argentine republic, 'when I say the Argentine republic offers to American manufacturers today a market of not less than \$100,000,000 over and above the present exports to our country.'"

Many clippings of like nature could be collected in the course of a few days, which, under the guidance of wise teachers, would throw more light on economics and world trade than is usually done in the course of a year, because the pupils are collectors and users of material in which they are interested.

In taking up the individual topics, the first and seemingly most important one is that of universal peace which is very closely and intricately related with social conditions.

Universal Peace

According to the comprehension of the pupils, a contrast may be made between the European school child and the American school child, the strange contrast of the European teacher with shouldered musket and the American teacher with her happy and interested pupils, a still stranger contrast between the European schoolhouses (now used for hospitals, etc.) and the American schoolhouses filled with the future citizens of America. Sincere appreciation on the part of all children that they are now Americans, regardless of racial origin, could be easily made quite emphatic. Respect for all nationalities and political beliefs contained within the schools could and should be made with lasting impressions because the children now feel they are truly Americans in a great democracy where people respect other people and agree to disagree in good spirit.

Through the horribleness of this war, it is believed that universal peace and the brotherhood of man can be and are hastened by America's sane attitude. Such an event as a special prayer day for peace, encouraged and set apart by our devout President, Mr. Wilson, and taken up by all churches, must surely have some influence on every American's conception of peace and brotherhood. A representative example of this influence is shown by Superintendent George L. Farley, Brockton, Mass., in his bulletin to teachers of September 11, 1914. "The Superintendent suggests to all teachers and principals that in discussing the situation in Europe, they be careful not to take sides with any of the nations, but to maintain a neutral position in accordance with the wishes of President Wilson, as all will realize that there are children of all nationalities in our schools."

Dr. Maxwell, Superintendent of Schools, New York City, says:

"Our constant aim should be to clear the minds and hearts of our children of old-world hatreds and prejudices, whether these hatreds and prejudices are racial, social, or religious. . . . Sublime is the

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undertaking to strip millions of children, in whom the lust to strike the racial enemy is innate, of the inborn propensities to strife. Therefore, a teacher who, before her pupils, assails the Austrians or the Belgians, the English or the French, or the Germans, or the Russians, or the Servians, is guilty of two heinous offences. The first is an offence against a child. He may wound the sensibilities of a deeply sensitive boy or girl, and this, as I have often told you, is the teacher's cardinal sin. He offends against our national patriotism, which was and is, to make one, on American soil, the children of all the earth's nations—to wipe out and not to perpetuate racial prejudices."

Again, no more suitable words could be uttered to illustrate the desired results of the teaching of the horrors of war than those spoken by Dr. Maxwell regarding the collateral horrors. He says:

"No occasion should be neglected to impress upon our children the horrors of war—not merely the immediate horrors of the battlefield, but the collateral horrors that follow in the wake of war—the orphaning of tender children, the widowhood of loving wives, old age deprived of its natural support, the flower of a country cut off in its youth, the poverty, the disease, the unspeakable anguish of mind and body. And all this to the end that our children, to whom, in years to come, may be committed the issues of peace or war for our beloved country, may learn that war is so dreadful a thing that it should never be entered upon lightly, but only as a last resort in defense against national peril or in support of some fundamental principle of transcendent value to humanity, as for instance, the abolition of slavery with its horrors worse than war."

Franz Boas, the Columbia anthropologist, on teaching the war (*Everybody's Magazine*, November 1914), expresses most emphatically the real existing conditions in America and very largely the teaching spirit in the American public schools when he says:

"Since our own political interest in the war in Europe is weak, we stand naturally nearer to the standpoint of international morals and are inclined to misinterpret the motives that sway the nations at war. We should not deceive ourselves. It is only the lack of immediate interest that determines our attitude. We are no less eager than the nations of Europe to instil the idea of the preponderance of national interest over human interest into the minds of the young. We, too, teach rather the lessons of aggressive nationalism than those of national idealism, expansion rather than inner development, the admiration of warlike, heroic deeds rather than the object for which they were performed. Given a national conflict, and the same unreasoning passions will sway our people that are carrying Europe to the brink of ruin."

The attitude of Dr. Condon, Superintendent of the Cincinnati Public Schools, cannot be over-emphasized when he says, "the principal use to be made of this war is for the purpose of teaching by contrast the blessings of peace . . ."

The work of the Red Cross, together with its history and past humane work, such as is given in the *World's Work*

("The Red Cross of the Warring Nations"), could be one of the topics for special investigation for several days. All the present activities, as given by newspapers and magazines, may be taken up and directed along the proper channels. These clippings, gathered by the pupils, should be organized and systematized according to their values in an orderly, interesting and pedagogical manner.

Closely related to this, information may be gathered regarding the work of churches (such as, "Nuns acting as Nurses," and the like), philanthropic movements ("John Wanamaker sends Big Ship Full of Supplies to Relieve Thousands of Homeless and Hungry in Belgium"), the humane societies, the relief funds, benefit concerts, theatre performances for relief funds and women's entertainments for war sufferers. All these affairs afford the schools the greatest opportunity in the history of the world for the teaching of morals, tolerance, ethics, justice, and peace. Magazines and publications representing different nations, such as the *Vital Issue*, the *Fatherland*, and others, could be used by the wise teacher to develop fair-mindedness, tolerance, the ability to see two sides, good judgment and respect for those who differ.

The lecture method must not be overlooked on account of current news in the teaching of universal peace. Prominent influential speakers as well as the teachers should give lectures along these lines. Also, maps could be used to show the folly of national divisions and boundaries.

It is also believed by many that discussions and debates by the children themselves along many lines would be beneficial and would make lasting impressions. Superintendent J. E. Bentel, Goldfield, Nev., says, "Our literary societies had joint debates on who is responsible for the war. Our teachers lecture on it in general assembly once a week. We have all the reviews coming to the reading table and students are encouraged to study the war news and leading editorial opinions on both sides."

Superintendent W. M. Shafer, Cripple Creek, Colo., says, "There is no more danger of fomenting antagonisms among pupils of different normal loyalties than there is of doing the same thing during the local, state or national political campaigns and the same wisdom and sobriety of the teaching force which prevent woeful outcomes in the one case will prevent them in the present situation. . . . I have seen our own schools go through the bitterest of strike and labor contentions and our safety then was in the good sense and judgment of teachers and principals."

Social Conditions

Superintendent Parker, Waltham, Mass., says, "The public school is an instrument fashioned by society to perpetuate and promote its own civilization. . . . The school is always dealing with those tendencies of human nature that make for or against civilization. For civilization is not a matter of arts and sciences, of engineering and architecture, of invention and discovery, or even of modern conveniences. It is a matter of social disposition. It has to do not with physical forces and physical laws, but with social forces and the laws of human nature."

If this conception of the public schools has no element of truth in it, then the result, as Dr. Boas points out, from the race viewpoint would be most appalling. He says, "If the struggle now devastating Europe were as has been claimed an unavoidable war of races, due to deep-seated 'racial instincts,' then we should despair of the future of mankind. Beyond the conflict would be others without end, as the development of international intercourse brings into consciousness new types of racial differences."

Social relationship, internationally, with the nations of Europe and with those of the western hemisphere, furnishes valuable and interesting topics. While it is true that much may be conjecture, yet that does not destroy the valuable inherent lessons involved in the study and application of approximate social truths. A little time might be wisely used in the discussion of social relationships of European people at present and the effects of the war upon European social life. Comparisons may be made with the former European wars, that is, the social effects internationally and the social life nationally and municipally after every great war. Also, the effects of past wars upon the aristocratic classes and nobility should be noticed, and the probable effects of the present war upon the same. In connection with these effects, most valuable and interesting lessons could be developed as to the effects that the war has upon religion, character, standards of living, etc. While it is true that nothing absolutely definite could be evolved, yet valuable fields of knowledge would be entered into because of the pupils' interests. Conservative judgments might be formed and developed here by having high school students make estimates based upon past facts as to the lasting effects of the present war.

The methods most advantageously used in this social study would be a combination, at times, of the map, lecture, debate and class discussion methods. From every justifiable source

possible, information may be gathered along every phase of this social study.

Education

The effect and result that the present war will have upon the educational world, especially in Europe, are very valuable for consideration in the American schools. The great responsibility that rests upon the American youth as the future master in education could be used as a valuable stimulus. Several hours of recitation work during the year could be devoted to this topic. In this, as in other subjects, the teacher might suggest that pupils are to read and collect, outside of school, all the material possible on any educational phase connected with the war, such as the destruction of schools and universities, the effects of the war on German, English, and French higher education and the like. After material has been collected for a week or more, all the pupils should report the nature of their information to the teacher, who then might systematize the articles and clippings (the pupils could do this in certain grades), on which a very interesting and valuable recitation could be held, each pupil being held responsible for a recitation on his individual collection.

History

In recent years the real pedagogic value of textbook methods in teaching history has been questioned. At present while volumes of history are being made almost daily, greater objections than ever are made to the old methods of history teaching. If it is agreed that history is the activity of man overcoming his environment, and civilization is the result, then no truer study of history and civilization can be made than by the study of the present war in its relationship to the past. In this method of study, special topics may be assigned on which pupils are to gather information. This may break up the usual order and procedure of text-book methods, but the results will be worth the extra work incurred on the part of the teacher.

The following method of M. B. Livingston, Eighth Grade, Farren School, Chicago, Ill., may be one of general value:

"At the beginning of each history period a child who has a picture or a cartoon shows it to the class and explains it. If I consider these very good, they are pinned on the bulletin board. Often the child may wish to ask about the picture or his cartoon, etc. I have the children bring clippings from the newspapers which they read or tell about. I prefer the child's own presentation but ask him to bring the original article because he often makes mistakes in his interpretations."

To illustrate the topical method, the *World's Work* has an article on "The Laws of War," by Lyman Beecher Stowe; and other publications have articles of a like nature. The teacher, when assigning this topic on international law, might ask the pupils to give a brief history of the source and origin of international law in addition to the gathering together of the present literature on the subject. Of course such an extensive subject, reaching as far back as the Amphictyonic Council among the Greek City States in the seventh century, B. C., would require at least several days' time for high school students. In grade work this could be given in story form by the teacher at the same time the articles are discussed by the pupils.

Probably the first general topic that should be taken up would be the land area and location of the different nations, the physiographical conditions, race origin, population, kinds of government, social and religious life, education, and economic conditions. This might best be given in the form of a recitation lecture by the teacher. At any rate, not much time should be devoted to this too general topic, but just enough time so that the pupil becomes intensely interested and has enough general knowledge to understand the more specific topic. When this is done, interesting comparisons may be made by the teacher in order to show the nature of the desired work. Special topics could then be assigned for collected information. Too much emphasis can not be laid here on present events and happenings as the nucleus for past events. That is, history should be taught in the opposite way from what it is taught at the present time. However, while the inductive seeking of past events through the present is emphasized, the value of deductive teaching should not be minimized.

President G. Stanley Hall says:

"Never have the minds of our young people been so open to information about and comprehension of the essentials of European history and all its best lessons. Some of the teachers begin with a sketch of the War of 1870 and the German unity that followed, with Prussia and the Hohenzollerns dominant. Another sketch of the development of the Austrian Empire from the conquest of Hungary to the belt of Slavic states about it might follow, and then could come an outline of the Balkan War and the story of what Turkey in Europe and Constantinople, so long a focus of European diplomacy, now mean and have meant. Something too should be taught of the development of colonies by England and also the growth of her navy. The naval history and policy of France and Germany, the story of the partition of Poland as it could be told in a quarter of an hour or more, what pan-Germanism and pan-Slavism mean and are, and how they would reconstruct the map of Europe:—all this told simply and briefly, with maps, could be brought home in outline

to the comprehension of every high school boy or girl who would thus have in mind the historic key for understanding many if not most of the causes and stakes at issue in the war."

The topics in political history taking into consideration the different kinds of government, how ruled, etc., would be of a fascinating nature to pupils. The question as to the future of monarchy, democracy and allied topics should also be discussed. Regarding many people's ideas of the downfall of monarchy such examples as King Albert and Queen Elizabeth of Belgium, and the people's idolizing attitude of them, because of their suffering side by side with their subjects, might at least show some reasons for the continuation of monarchical systems of government.

The commercial relationship with its influence on history and its determining factor in the development of nations is an important topic. The history of canals (Erie, Suez, Kiel and Panama) and their national as well as international influence may be treated with the history of nations. Phœnicia, the Hanseatic League, and various cities in the past, such as Genoa, Venice, Florence and others of like importance should be considered and related with the present international commercial relationships. With considerable emphasis, the industrial history of nations may likewise be treated.

The history of wars may be taken up in order to discover if possible their source and origin, as for example, whether or not the wars are outgrowths of conquest, of religion, of kings, of nobility, of aristocracy, of the desire for expansion, of politics, of commerce, of industry, of alliances, or of economic conditions.

The teaching of the present war itself is of great value. President Hall says:

"There are first the standing armies of each country, the kinds of troops, cavalry, infantry, navy and their organization, from the squad to the corps, the officers of each rank, their training, the uniform and arms, what each soldier carries, how they sleep, are fed, how the sick, wounded and imprisoned are cared for, how the dead are buried, the work of the Red Cross, pay, what mobilization is, the series of reservists, African and Asiatic auxiliaries, transportation of troops, strategy, flanking, kinds of artillery, from rifles and machine guns up to the siege mortars and howitzers, their manufacture and that of ammunition, navies, kinds of ships as submarines, aeroplanes, Zeppelins, the Kiel Canal and what it means, and now perhaps the Suez, sanitation and care of health, something about the lives and character of the great generals, spies, etc.; something of all these might be taught."

The laws and regulations of wars furnish an instructive and valuable field of investigation at present, because of the massive amount of material bearing directly upon this phase of daily happenings.

The nature, influence and result of past treaties should be discussed in full at this particular time because of the need of a knowledge and comprehension of the desired and hoped for future treaty. The necessity of good statesmen and diplomats in the present intricate difficulties and the results of poor treaties of peace in the past should be emphasized, because the future of Europe is in the hands of the statesmen who will soon decide what the conditions of peace shall be. Some general understanding of this should be had by all American children.

The history of international difficulties settled without war could be compared with those settled by war. Also, a very much needed and important topic for discussion in the public schools is the law of neutrals.

Thus the various topics could go on almost indefinitely, but before closing the ideal of the "European Republic" and the Federation of the World with universal peace firmly established, should be, most of all, firmly implanted in the minds of all American children by the sane teaching of the world's past and present mistakes. By pointing out every feature that bears directly to this long looked for State, Utopian though it may be, and the plausible results of the present European disaster and folly, which it is believed will hasten universal peace, great lessons that will influence the attitude and make-up of the future American citizen may be taught that will be of a lasting nature.

Civics

In this subject as taught in the grades and high school, a comparative study is, without doubt, the most valuable one under present world conditions. In teaching our township or county, municipal, state and national government, the teacher should make comparisons with the European districts, cities, provinces, and institutions of government. In these comparisons, the class should gather, with the teacher's help, information on the German Bundesrat, the Reichstag, the Prussian Diet, the Russian Duma and brief comparisons of each of the European nations. The colonial policies of all the European powers would be both interesting and valuable. Although a comparative study of governments in the civics work may be emphasized, yet the greater part of this work may be included in that of history and economics.

Economics

In the grades and high schools of many cities the subject of economics is considered too difficult. However this is no reason why the economic facts which affect the child's home

and daily life may not be taught. Many children's training ends before reaching the high school, and comparatively few children's training goes beyond. These are the very boys and girls who need this economic training most. And since the present war has greatly modified and made possible many obvious lessons, children should not be turned out in gross ignorance because these lessons were formerly deemed too academic. Even some of the children in the primary grades know some of the effects of the war if through no other way than that of toys.

The extensiveness of this war is well shown by President Hall when he says:

"Relatively few industries, not only of the belligerents but of every country in the world, are unaffected by this war. It opens to us, for instance, unprecedented trade possibilities in South America, and while it closes some of the markets, so it opens others for the first time, and a merchant marine and all ships sailing under a neutral flag are increasingly needed. The effects of the war on food-stuffs, wool, kerosene, silk, cotton, steel, coal, prices, markets, labor and also immigration and temperance, and about every line of productive industry and every avenue of foreign trade:—all are profoundly affected and sure to be more so if the war lasts, and every industrial and commercial relation will find itself in a new world when the war is over, so interdependent have the great countries of the world now become upon each other."

Most of the obvious economic lessons may be correlated with history, civics and geography. At times it would be very profitable to devote one or more periods of class recitations on a specific subject, such as national expenses, cost of militarism, national expenditures on the army and navy (national comparisons), pay of the soldiers, pensions, destruction of property, and comparisons of national debts.

Without any possible criticism, many interesting debates could be held in the high schools on world trade, merchant marines, the value of navies, modern naval warfare, mines, and the financial benefit or detriment of the present war to America. As an illustration, Superintendent J. F. Keating, Pueblo, Colo., says, "our literary societies discuss various phases of the war and the high school has held one public discussion of the question, Resolved 'That the triumph of Germany in the present contest would retard the progress of democracy.' One teacher in our high school corps thought this discussion should not take place. She feared it might arouse bad feeling, for we have a school of mixed nationalities, Austrians, Italians, Scotch, Irish, English, and Germans well represented. However, we decided to let the debate go on. The result was an excellent program and no ill-feeling so far as we can discover was in any way aroused."

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The immediate economic losses to society from men being killed may be taken up by advanced high school students by having them make comparisons between present and past wars based upon the estimates which Dr. Terman gives for postponable deaths by disease. He says, that it is computed "the new born child has an average money value of at least \$95. The value increases to \$960 by five years, \$4,000 by twenty years, and drops again to \$2,900 by fifty years. The minimum average loss to society from each postponable death has been elaborately figured at \$1,700. Of the 1,500,000 deaths in the United States each year the combined opinion of the best medical authorities regards at least 42 per cent postponable, or 600,000. The annual loss from the cause is therefore \$1,700 x 600,000, or \$1,020,000,000."

According to Crammond's account as summarized by the *New York Times* Annalist, the Franco-Prussian War of 1870 cost France \$3,600,000,000 counting her indemnities and indirect losses. With her annual savings of \$300,000,000, as they were in 1869, it required twelve years to pay this unnecessary cost. The cost of this same war to Germany is estimated at \$387,750,000. However, if the indemnities and the value of the ceded provinces are allowed, Germany realized a profit of \$820,000,000.

According to Crammond's summarized accounts, the foreign trade of France was not greatly affected at first. He says, "In 1869 imports were \$626,500,000 and the exports \$615,000,000. Next year imports were \$556,000,000, exports \$572,000,000. By 1872 France's foreign trade had risen sharply. Imports amounted to \$689,000,000 and exports to \$735,500,000. It was in raw material that the principal shrinkage during the war occurred, while the principal decrease in exports occurred in manufactured goods.¹

While the subject of banking and exchange is a difficult one, yet it is felt that a few fundamental facts might be pointed out to both grade and high school pupils. The teacher might show how London was the world's center of exchange, and the pound sterling the standard of exchange for at least the past one hundred and fifty years, and how a great amount of this exchange has been transferred to New York City with the American dollar as the standard. A considerable time might be devoted to the conditions of all banking concerns and the probable results of the moving of capital, international borrowing, European debts, national credit and the intricacy of international credit may be correlated with Alexander

¹ These facts regarding commerce and the above-stated actual money costs of the war, plus the economic loss from deaths, would undoubtedly give the pupils a new light on the enormous cost of war.

Hamilton's conception, and the history of the United States Bank along with our monetary history.

Geography

No one desires to detract anything from the real science of teaching geography but many do desire to vitalize the science. Too often uninteresting "cut and dried" methods are used that are far beyond the ability of the child to comprehend. Teachers will do well to consider and utilize the interests that children have at present in the movements of armies as sections of the country and cities are captured or lost,—which interests may now be wisely used in the motivation of geography. These interests of the children are great incentives for them to understand the physiography of Europe, the industries of the people, the size, wealth and location of cities and countries, the agricultural products, food-stuffs, imports, exports and so on. Many teachers are having their children collect and date newspaper and magazine maps for correlative use with their geography texts. However every grade should have the excellent inexpensive *London Times* War Maps, which are most excellent for the locating of important cities.

A little account of the history of Alsace-Lorraine and a few remarks about historic cities by the teacher, would interest and fix many facts in the minds of the children for always. Considerable time may be devoted to the study of the rivers, railroads, short land routes to the east, sea routes, why Germany and Austria-Hungary felt hampered, why certain places become centers of interest and like topics involving national interests in Asia and Africa. All these suggestive features can be taught without partisanship and without criticism from anyone.

Hygiene

The history of the hygiene of the soldier is one that appeals to every school child. It is a known fact that the present strength and lasting ability of the army consists in hygienic conditions. The whole training of a soldier is mostly hygienic in its nature, such as posture, regularity, promptness, cleanliness, a slight training for emergencies, and many like things. These the child would eagerly seek to know, if the work were properly graded according to his ability to comprehend. Comparisons of men killed in battle with those who died because of unhygienic conditions, improper treatment of wounds, etc., would be gladly read and enthusiastically reported.

The child's intense interest in the soldier's camp affords the teacher a great opportunity to teach personal and civic

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sanitation. Considerable time might be spent on each of the following topics,—what determines the selection of the site of a camp (proximity to water and natural climatic protection, nature of the soil, avoidance of old camp sites and reasons, and the dryness of the site), what determines the site of a barrack and how constructed (shape and size of rooms, wash rooms, ventilation, space allotment for each soldier, and the care of the sick), tents (kinds—Sibley tents, common tents, wall tents and shelter tents, the size, shape, construction and material of each, the hospital tent, arrangement of all tents, the tent ditch and the nature of surface draining), huts, water supply, sewerage, and disposal of waste. All these phases, while intensely interesting to the pupil, would teach the highest type of hygiene and sanitation, and could be easily correlated with such series as the Gulick Hygiene Series.

The history of Army Hygiene might be taken up in story form in the grades, showing that in former times little or no attention was paid to the sick soldier by army officials. The only attention the sick or wounded soldier received was by a comrade or by women following after the battle, later by monks, and still later by humane volunteer societies and the Red Cross. The hygienic care of the well soldier was unthought of. These facts may be compared with that of the present military conceptions of the hygienic efficiency in all armies.

It is estimated in the Peninsular Campaign in Spain, 60,000 French soldiers were killed and 400,000 died of disease; in the Russian Campaign of 1812, Napoleon lost 480,000 men, mostly from cold and disease; and in his 1813 Campaign, his army of 100,000 was practically annihilated because of unsanitary conditions. Also, it is estimated that the British army lost 230 men out of every 1,000 in the Crimean War from typhoid, dysentery and other infectious diseases. The French lost 140 men out of each 1,000 and the Germans 24 in the Franco-Prussian War. In the Boer War, the English loss from disease was almost double the loss from bullets. And in the recent Japanese War, Japan lost 25 men from disease out of every 1,000. Such facts as these may impress upon the minds of children the great importance of personal and civic sanitation and the direful results of ignorance, filth and carelessness.

Some little time may be devoted to the soldiers in camp, discussing their daily life, their medical skill, the physical requirements for enlistment, the exercises and drills, the military viewpoint of hygienic care (economic and efficiency

viewpoints), the modern use of the various therapeutic vaccinations for typhoid, smallpox and many other infestious diseases, the soldiers' clothing and shoes, the recent extraordinary care of all the nations towards their soldiers' rations, with comparisons of kinds of rations and amount (Russia 4,929 calories; France 3,340 calories, England 3,292 calories, Germany 3,147 calories, and the Austrians 2,620), the transportation of food and the preparation of the same, the medical inspection of food and drink, rules and regulations regarding the time and amount of water the soldiers' drink, the soldiers' equipment (ammunition, rifle with bayonet, entrenching tool, clothing, food, accoutrements, personal necessities, etc.), and camp sanitation.

A comparison of the different kinds of bullets used by different nations according to international regulations, could be mentioned with the nature of the wounds made by the so-called "humane bullets." The matter of burial may also be taken up along with what determines the site of the field hospital and the specific preparation made by the army's medical staff for the calculated number of killed and wounded soldiers. Many superintendents emphasize this phase of hygienic teaching; yet little or no emphasis should be placed upon it.

Eugenics

It is felt that a great mistake is made by most public schoolmen regarding their attitude toward eugenics in the schools. Without doubt the schools are the pathway of approach to society. The early training, character and ideals of society are shaped and moulded very largely by the schools. If through eugenic selection it is conceived that a superior generation is possible, a place must be determined for this teaching. President Hall says "from the first moment after birth, Nature begins to prepare the infant for future parenthood and all else is secondary and tributary to this."

Few superintendents concede, and justly so, that the term "eugenics" should be used in the schools, but, according to the age and comprehension of pupils, certain explanatory lessons may be given and the personal moral responsibility of children developed. This can be greatly emphasized in nature study and agriculture in the grades, and in biology in the high school. Surely the human being is no less important than the studied seeds which the pupil studies and selects for planting.

President Hall says that the teaching of eugenics "broadens the historic sense by showing the individual's relations to both his ancestors and to posterity, and inculcates the sacred-

ness of the immortality of the germ-plasm which must be served as a center of supreme interest in all human affairs." He further states that statistics show how many children would have been born to these seven to ten million men had they stayed at home. Thus, the number of the best children, the world's greatest asset for national and cultural prosperity, has been greatly reduced. Furthermore, medical studies show the nervous and physical deterioration of those who survive the war and its effect upon parenthood.

A fitting conclusion to this discussion of one of the greatest pedagogical problems that the educational world has ever encountered and which will cause educational methods and many school subjects to undergo a new evaluation, is briefly made in the following quotation from President Hall,—“the war and its lessons can be taught without offense and it is a pedagogic blunder which is sometimes worse than a crime to exclude a topic so quickening to intelligence, so rich in matter for which every youthful mind hungers, and which affords such an unparalleled opportunity to teach toleration and agreement to differ, which is about the best thing our country stands for and which gives us all a new glow of pride in it as now in a new sense standing forth as the best in the world. And best of all it is an opportunity, such as never yet came to schools, to teach the lesson of peace, which is now coming to be the world's supremest blessing and need, which is the thing that the world is coming to long for with greater ardor every day the war lasts, and which, if we now teach how to lay to heart these precious lessons, will, when it does come in the wave of inevitable great reaction, be, as the world has for two thousand years prayed it might be, perpetual and eternal.”

ARISTOTLE'S THEORY OF ART—A SKETCH

By AUSTIN S. GARVER

The better to get Aristotle's point of view and to understand the problem he set himself, we must remember the stage of Greek culture in his time. His date is the middle of the 4th century, B. C. (384-322). There was just closing behind him the greatest period of Greek culture and civilization. His life almost touched that of Socrates. He was the pupil and companion of Plato during the last twenty years of the life of that philosopher (368-348), and during the best years of his own life (from his 16th to 36th year).

In literature the great age lay immediately behind him. Sophocles and Euripides were only twenty years in their graves, and Aeschylus was as near to him as Abraham Lincoln is to us. He was enveloped by their living influence.

Sculpture had just passed its zenith. The Parthenon with its decorations by Phidias and his school, was still fresh, and gleamed over the city as the source of its greatest pride and glory. Names of great painters too appear, such as Polygnotus and Zeuxis, the former of whom had decorated the porch of the Parthenon with celebrated paintings.

That marvelous fifth century B. C. witnessed the highest triumphs of the Greek genius in every field of the creative imagination. In its scope and the quality of its achievement, there is nothing to be compared to it in history.

When Aristotle appeared it was past indeed, but its glory was still fresh. All this is worth recalling for the sake of seeing how favorable was the time for a general survey and summing up of this past experience. It is also of value as making clear to us what Aristotle set out to do. His was a keenly analytic mind. He had little interest in abstract discussions. His method was that of the scientist, to interrogate the facts and ascertain the truths to be drawn from them. His wide-ranging mind touched every field of human interest, and his writings are but the report of his observations and conclusions.

It was so in the field of art. He starts from the concrete facts. All the splendid fifth century achievement lies open before him. He appreciates its power and its charm. He

asks himself, what is the secret of its power and its charm. This is the question for which he seeks an answer, and in a way it is a simple question. We must not look upon him as the spinner of an abstract theory of aesthetics. He begins his inquiry at the other end. Here is a poem, a statue, a painting, why does it give us such delight, wherein does its greatness consist, and what is the cause of the powerful impression it produces? He studies the concrete example for the purpose of extracting the principle underlying and inherent in it. It is a modest, scientific way of going at the problem, and never was there a more auspicious time, or a mind so competent for such an inquiry.

Furthermore, in the Greek practice there was no such separation of art and artists as has created so much confusion in later times. There were many varieties of beautiful things, vases and other common domestic utensils, little figurines for children or graves, potters' work, and painters' work, and stone-carvers' work and builders' work, and the work of the physician and the teacher and the poet and the statesman;—one star differs from another star in glory, but they all together form one galaxy. Perhaps galaxy is too brilliant a word; company would be nearer the Greek idea. It would seem that the artist was not highly esteemed. Certainly he was not set apart as a class, much less a distinguished class. Our use of language would have been incomprehensible to a Greek. He would understand if you spoke of workmen in this or that material, in marble or clay or wood or bronze or color or even in language. The word "maker" would have been intelligible to him, but in his logical mind all "makers" would belong together, and the only distinction between them would be that of good and bad, and not at all that of the material in which they worked. Art naturally splits up into innumerable forms according to its object, its medium and its mode of expression, but the principle that unites all these forms is one and indivisible, and that is to be found in a relation to nature.

This large simplicity of view is shared by Aristotle. He knows nothing, for instance, of two distinct realms known as the fine and the useful arts. He distinguishes between them, it is true, but he never separates them. There are degrees of eminence which he recognizes, but there is no exclusion of any humble member from the family circle.

His all inclusive statement is that "art imitates nature," and whatever, high or low, comes within the scope of that definition as he interprets it, is art. As a matter of fact, he does bring within it pretty much all that man does, as daily

workman, as moral agent, as a political animal, or as a worshipper of the gods. Art, as revealed in the things that please and satisfy the instructed and fully developed man, is thus in one view a criticism of life and an approach to its innermost meaning.

The brief and somewhat fragmentary treatise on poetry contains his chief discussion of the subject. There are frequent references to it in his other works, but they are for the most part in the nature of casual observations. His completest statement is in the "Poetry," but even there it is far from complete. The work itself is imperfect, and, as the name implies, is concerned mainly with the Art of Poetry and especially with tragedy. But all the arts are included, with more or less particular mention, and united under one general principle.

Aristotle employs two great cardinal terms, which are central in his whole discussion, and which are as vital and significant now as when he first adopted and expanded them. The one is *κάθαρσις*, cleansing, to denote the effect of art, especially of tragedy; and with this I am not concerned in this paper; the other, no less pregnant with meaning, is *μίμησις*, imitation, to denote the origin or originating principle of all art, which I would attempt summarily to discuss.

At the very beginning of his work Aristotle states his thesis in these words: "Epic poetry and Tragedy, Comedy also and Dithyrambic poetry, and the music of the flute and of the lyre in most of their forms, are all in their general conception modes of imitation." In these arts the imitation is produced by rhythm, language and harmony. This is his general statement, but his thought is not limited to the subjects mentioned, for in the immediate context he speaks of those who imitate objects through the medium of color and form and the voice, referring to the arts of painting, sculpture and song. The point emphasized is that while *μίμησις* is the mark of every kind of Art, it must necessarily vary with the objects to be represented, the medium used and the mode of expression. For instance, in poetry the effect is produced by language and rhythm, in music by rhythm and harmony, and in dancing by rhythm alone, for character and emotion can be portrayed in all these ways. It is no narrow mechanical theory he has in mind; it is a view that takes into account the varied wonder of the whole world of art. It is based on the universal instinct of imitation, through whose exercise man learns his earliest lessons and experiences the liveliest pleasures. On this conception the foundation of art is as broad and deep as the nature of man and the nature of things.

Aristotle further illustrates the meaning and scope of artistic imitation, in what he says about imitating men in action. They are to be represented not merely as men, but as men possessed of certain qualities. There are higher and lower types. The artist's task is determined by these differences. He may represent men either as they are in actual life, or as worse than they are, which is the case in Comedy, or as better than they are, as is done by Homer, Polygnotus and Sophocles. The "better," as the cited exemplars would seem to show, is to be taken not strictly in a moral, but in an ideal sense, as meaning the nobler type moving in a field appropriate to it; an Antigone it might be, or fleet Achilles, or Orestes, or Othello. The artist is not confined to a single type, nor to a perfect type in his work. He may represent what he will, but his success and rank will depend less upon his subject than upon the idea by which his purpose is directed. Even when the subject is imperfect, it may be shown in its "better" and truer being, not by the exclusion of the imperfection, but by treating it as a constituent part of a nobler whole. The character is made whole and complete, and at the same time kept true to life by the artistic intention. This is the way any good man might regard his moral failings. In this way Achilles is portrayed by Homer.

Throughout Aristotle's whole discussion of Art, a certain conception of nature, the object of imitation, is implicit. In Plato, God is the divine artist; the idea is a familiar one in Greek thought, and the universe as declaring the divine intention is a divine poem, not yet completed. Aristotle discovers this intention in nature and feels no need of going back of what he finds there. Without going into detail, nature is something more than its material part; in its essence it is a purpose, an urgency towards a goal, a struggle with rebellious matter, a creative force working towards a more perfect end than is yet visible except to the discerning mind. The artist follows this inner tendency of nature, and in the mimic world which he builds, he brings it to completion.

This principle is seen to hold even in the useful arts. Modern medicine has made us familiar with the idea of the deeper self which makes for wholeness and happiness; below all surface symptoms are these old life currents, moving ever in the direction of health. But this movement may be checked or diverted so that the end which nature has in view is not reached and we are sick. Now the art of the physician will consist mainly in his co-operation with the intention of nature, by removing the obstructions caused by fears and worries as well as physical defect, which prevent her free operation. The

best the physician can do is to give nature a chance and free her hand. For nature cannot realize her latent powers, unless she has suitable materials to work with, and the things that clog her steps are overcome. So it is that the art of the gardener aids the effort of the soil to produce plant life. So with all the practical arts. Even on these lower levels there is a certain *μύμησις* in man's struggle to supply his needs. Thus the escape of steam from a teakettle might suggest to the imaginative mind of a Watt an idea that would recreate the world. Such intimations are to be found everywhere. Nature gives the flint, art sharpens the edge and then proceeds to create the perfect tool. Nature furnishes the shelter of a cave, art isolates the cave, inserts windows and constructs a house. Nature makes a little hollow in the soft clay and fills it with water, art lifts the rude cup out of the detaining mass and places it in the hand after shaping it for a hundred uses.

In the higher ranges of art this fundamental principle is more clearly seen. Where the object of imitation is a definite object or a particular character, the work of the artist is not merely or mainly to hold the mirror up to nature to get a reflection of it in its actual appearance; for, as has been stated, there is more to nature than sense can report. It is an energy as well as an appearance and it does not work in vain. There is something here akin to our thought of evolution. Nature has an end in view which is "better" than the present reality. And this imminent intention of nature, which is perceived by the mind, becomes the "true idea" or ideal which is the object of the highest artistic imitation. It is the artist's privilege, therefore, and his greatest achievement to imitate things not as they are, but as they ought to be "according to a true idea."

The best instances of this are to be seen in the representations of character in the drama. A briefer illustration will serve to make the point clear. In painting a horse, the artist may paint the individual before him down to the minutest particular like a Preraphaelite, resulting in a more or less faithful copy; or dissatisfied with a bare realism he may veer to the other extreme and give you a fanciful picture which the foolish will call an ideal horse. But if he have the discerning mind he will proceed from the idea formed there of the horse in his essential attributes, and will do what Donatello did in his Gattamelata, or Phidias on the frieze of the Parthenon. There you have the immortal breed, real but not literal, only clothed with the highest reality.

When, therefore, Aristotle declares that art is the *μύμησις* or imitation of nature, he is far from meaning that the artist

is a copyist or mimic as our equivalent English term might seem to imply. Taking as his starting point the impressions and suggestions of nature, he forms an ideal towards which they point and in which their law is fulfilled; and his function is to give this ideal its fullest possible expression. From these sense impressions, as Shelley says,

“create he can
Forms more real than living Man,
Nurslings of Immortality.”

Better than further exposition, let me cite a modern instance described in the recent volume “Artist and Public,” by the eminent critic and painter, Kenyon Cox. He is considering Millet’s famous “Sower” in the Metropolitan Museum, a work as simple, severe and intellectual as the classic examples which Aristotle analyzed; and exhibits the qualities on which he laid emphasis. It has the special interest that in it we catch a supreme artist at work, and can observe his method. One can imagine what an ordinary painter would do with such a subject—the pleasant field with its many interesting details, the peasant dressed for the occasion so as to be presentable and attractive: a picture more or less pleasing, more or less faithful to a given model of a man sowing.

Many of Millet’s preliminary drawings and studies exist, and it is possible to trace the process by which the final result was arrived at. The everyday incident was his starting-point. It was there his imitation began, but it did not stop there. The idea in passing through his mind took on a larger significance. “At first we have merely a peasant sowing grain. Gradually the background is cut down, the space restricted, the figure enlarged until it fills its frame as a metope of the Parthenon is filled. The gesture is ever enlarged and given more sweep and majesty, the silhouette is simplified and divested of all accidental or insignificant detail. A thousand previous observations are compared and resumed in one general and comprehensive formula, and the typical has been evolved from the actual. We have no longer a man sowing, but ‘The Sower,’ justifying the title he instinctively gave it by its air of permanence, of inevitability, of universality. All the significance which there is or ever has been for mankind in that primeval action of sowing the seed is crystallized into its necessary expression.” Millet starting from the actual, but never content with the shows of things, penetrates deeper till he reaches the essential and universal. That is the supreme mark of all his work. Both in the simpler and grander scenes, he creates great and inevitable types of what Aristotle calls the highest object of imitation—“men in action.”

Such an illustration brings us very near to the heart of Aristotle's doctrine of *μίμησις*. It shows us how profound is the meaning of the term, and helps us to understand that "imitative art in its highest form is the expression of the universal element in human life."

We see then what the ideal would mean in this view of fine art. It is not something opposed to the real, or something better and prettier than the real, like the sentimental Madonnas of Guido Reni, or the sleek figures that not long ago passed for praiseworthy sculpture. The ideal is the real carried out to its full conclusion; it is the form which the ideas that are never completely manifest in the original, would naturally take if hindering conditions were removed. It is the representation of things, actions, passions, character in a word, "as they ought to be," and this "ought to be" is discovered by the intellectual divination of what is natural and necessary in the given circumstances. The artist is the maker, and it is his business to make man after the image of his own creative mind, to body him forth in his essential being, stripped of the disguise of what is temporary and accidental, until the *real* man, not transformed or "idealized," but liberated, alone is left for contemplation. That is why the artistic spectacle of life is so much more powerful to awaken emotion than any actual scene. It is a consistent, simplified whole, kept true to reality by the principle of imitation, yet unified, controlled and interpreted by the logical understanding. That is the ideal, the supreme achievement of the human mind, and the product of the highest creative genius.

It is never out of order to recall the clear and sane teaching of one whom Dante calls "the master of those who know;" especially in a time when the lights seem to have gone out, and art has become an experiment, and its secret is so often sought in fancies and schemes and formulas. It is well to be reminded on such authority that in its vast scope and variety, art in its fundamental meaning is one, not divisible except in a model way into the two unrelated departments of the fine and useful. The neglect of Aristotle's wholesome teaching has had a tendency to give us a denatured art, and has made so much modern criticism a dialect for studios and exhibitions, and much modern practice so full of vagaries, and so scornful of guiding principles.

We need not conclude that Aristotle has given the final and complete theory of art; important phases of the subject did not appear till long after his day. But he has left a body of doctrine of such value that it can never be forgotten or neglected without grievous loss. He died long ago, but his word is still

modern. All the great art since his day has been based on the principles then first clearly stated. Consciously or unconsciously, the great workers in art have obeyed the law, of which, if he was not the first discoverer, he was the first scientific investigator and interpreter.

THE DEVELOPMENT OF A CHILD'S VOCABULARY IN RELATION TO ENVIRONMENT

By MARGARET MORSE NICE, Norman, Oklahoma

How does environment influence a child's vocabulary? Where does he get his words, from indoor or from outdoor surroundings, from personal experiences or wider relations, from real life or from stories? What are the most important factors in his life when he first begins to talk and each succeeding year? Finally, what can we discover about a child's mental development from his vocabulary?

In this paper I have attempted to work out answers to these problems in regard to one child, E, our eldest daughter.

THE LEARNING OF LANGUAGE

In teaching our child the English language, we talked to her as to an adult except that our words were simple and concrete. In general our practice has been not to correct her mistakes, trusting to the force of good example. As much as possible we have tried to have her words stand for real things; for instance, we took her to see pigs and bears and skunks, so that she would not get her conceptions merely from stories, pictures and toys. Finally we make an effort to avoid the dead level of too simple language by at times dealing with familiar situations in new words.

E said her first words in her 14th month—"Mamma," "Bapa" (Papa), and "Ba! ba! ba!" in imitation of the dog's bark. She added one word in her 15th month, "Bah"—for what the sheep says; and eight in her 16th month—"Book," "see," "bru" (bread), "bu" (bird), "No, no," the name of a doll; and three more animal sounds. Her words designated specific things, she did not use one word for many concepts. At the end of her 18th month she had 145 words in her vocabulary. She then began to use sentences of two words "Look here," and "Kiss fowg" (frog),—both imperative. The next month she used sentences of three words—as "Betty kiss baby," and of four and five words in her 20th and 21st month. She never inverted the word order in her sentences. Personal pronouns first appeared in the 22d month, "my," "I," and "you" respectively. "My toe peek out";

"My toe happy." "I see goat." I have no record of the appearance of the other pronouns. "We" was the last to be used—in her 33rd month. In her 23rd month a representative sentence was, "Baby so happy bidy (spider) come back again."

Up to this time her speech was lacking in many minor refinements. She used no form of the verb "to be," she did not inflect verbs, she omitted conjunctions, most prepositions and both articles. She could say what she wanted to, but she said it crudely.

She then went to visit her grandmother and had as her constant companion her boy cousin—a year older than she. Her rapid improvement in speech may have been partly due to his influence. In three months, by the time she was twenty-six months old, her English was established. She inflected her verbs, adding "s" to the singular of the present tense, she formed the past tense and past participles by adding "ed" and the present participles by adding "in'"; she used conjunctions, prepositions and the article "a." Of course she made many mistakes, and still does at the age of four; but there is a great difference between the "baby language" before she was two and the established "child language" shortly afterwards.

THE ENVIRONMENTS

Words may have very different concepts behind them according to one's experience. A child who gets his language mainly from conversation with his elders, from playing with toys or looking at books and listening to stories has a less vivid foundation for his words than the child who lives with realities, with animals, plants and other children and has an opportunity to do things himself.

In order to judge a child's vocabulary one should know the child's environment. How much reality is there in it, how much chance for the child to learn through experience? How much actual contact is there with other children and with nature? What is there in the way of cultural stimulus?

At the age of eighteen months, E lived on the outskirts of Cambridge, Massachusetts, so that her environment was approximately that of a village. The season was winter. She was the only child in the family, but four days a week she played with two boys, one two and a half years old, the other five. She saw many animals, cats, dogs, cows, horses, and especially liked to watch hens. As a pet she had a frog which she chased over the floor and when she had caught it carried about in her hand. She was fond of her toys. She loved

picture books, especially those with colored pictures of animals and flowers.

When she was three years old she lived near the centre of Cambridge, so that her environment was that of a city, yet she had a large yard to play in. For companionship she had her baby sister seven months old, and three afternoons a week a four-year-old boy visited her. It was June and she gathered flowers and watched hens and ants and English sparrows. We took her to the circus and to several parks so that she could see the animals she had heard about. Her pets were two gold fish, a snail and a pollywog. She played comparatively little with toys or dolls. Her cultural stimulus consisted of picture books, Beatrix Potter stories, fairy stories and Mother Goose.

From the age of three to four E has lived in a small town in Oklahoma—a village environment. Child companionship has been well supplied by a little Montessori Nature Study School at her home in the mornings, and by many other children of her age and older who come to play with her. She has had a great interest in flowers, learning the names of all that she found. She had a garden of her own and planted, weeded and gathered products from the family garden. For pets, she has had rabbits, hens, chickens, turtles, horned toads, frogs, toads, tadpoles, salamanders, snails, caterpillars, and crawfish. She cared very little for toys or dolls. She has not been taught to read and does not know a single letter. She has been told nature stories and poems of Blake, Field and Rossetti. She likes to study pictures and asks many questions about them. From her 42nd to her 47th month she invented stories in which animals did the most interesting things she herself had done.

THE VOCABULARIES

The 18th month vocabulary was obtained by keeping a record of all the words used up to that time. The three-year-old vocabulary was taken for one month before the child's birthday. A record was kept of every new word she was heard to say within that time. A few words were obtained by asking sentences which would involve the use of the words it was thought she knew. As I was almost constantly with her, her three-year-old list probably represents well her working vocabulary.

It is much harder to get a four-year-old child's vocabulary, they know so many words which they do not have occasion to use during the time under observation. I kept a partial record of E's vocabulary from her 45th month to her 47th, and during the 48th month a complete record of everything new

that I heard her say. In this way I have her vocabulary in Oklahoma, on the journey east and in Massachusetts. A number of words, perhaps twenty, were obtained by pointing to an object and asking her, "What is this?" She had no idea that her words were being taken down. The recorded vocabulary at four years does not do her full justice.

What we want to know in a child's vocabulary is how many different words that child knows and uses. I have not included inflections of words except where they are from different stems as "am-was-been," "go-went," "good-best." This excludes from the list irregular plurals of nouns and the inflections of most verbs. It is misleading to include past tenses and present participles in the vocabulary of any child who can form them well. As some three-year-olds do not yet inflect their verbs, it should be noted whether or not they do, but the vocabularies need not be inflated.* I have tried to include only words of which the child had a fair conception of the meaning. Words that are listed as "obtained from stories" are not those that she sings over to herself without necessarily comprehending them, but only those which she adopts into her play or conversation. I have counted proper names, because they help to indicate the development of the vocabulary.

THE VOCABULARIES AT 18 MONTHS, 3 YEARS AND 4 YEARS

Under each subject the words used at eighteen months are first given, then the new words learned in the third year and finally the new four-year words. Thus her three-year-old vocabulary includes the one and a half-year words, and the four-year-old vocabulary includes all the words for the three ages except those in brackets as " [hurdy-gurdy]." The words are first written as they were pronounced; if that is incorrect the correct pronunciation is given in parenthesis as "ee (ear)." If the pronunciation is changed in the next vocabulary, the word is repeated in italics so as to show that it is not a new word, but only an advance in pronunciation.

"N. W." means "New Words"; "T. W." means "Total Words."

* Mateer,⁶ Whipple,¹¹ Heilig,⁵ and Bush³ include everything in their vocabularies, past and present participles of verbs, proper nouns and inflections of adjectives. The Rowes¹⁰ list past and present participles of verbs for their 4- and 6-year-old boy, but do not include numerals and proper nouns in the detailed vocabularies. Gale,⁴ Pelsma,⁹ and Boyd¹¹ exclude participial forms of verbs and other inflected forms. The first two omit proper names; Boyd apparently includes them.

NOUNS

1½, 114; 3, 691; 4, 1080.

I. *Personal Experiences.*

1½, 46; 3, 231; 4, 294.

1. Body-

1½: T. W. = 11.

Ee' (ear), eye, finny (finger), foo' (foot), hai' (hair), han' (hand), hea' (head), knee, mou' (mouth), noi' (nose), toey (toe).

3: N. W. = 20, T. W. = 31.

Arm, bones, cheek, chin, curls, *ear*, face, *finger*, *foot*, forehead, *hair*, *hand*, *head*, heart, heel, lap, leg, lip, *mouf*, (mouth), nail, neck, *nose*, shoulders, teeth, throat, sumb (thumb), *toe*, tongue, tummy.

4: N. W. = 8; T. W. = 39.

Back, b'ood (blood), brain, lungs, moocous (mucous), 'gin (skin), 'gull (skull), voice.

1a. Health.

3: T. W. = 8.

Alcohol, bite, castor oil, cold, en'ma (enema), olive oil, s'iver (sliver), witch hazel.

4: N. W. = 8, T. W. = 16.

Bacteria, disease, *enema*, measles, mumps, poison, 'gab (scab), tummy ache, vaccination.

2. Clothes.

1½: T. W. = 9.

Bunnee (button), coa' (coat), didy, hat, minny (mitten), pin, poda (pocket), shoe, 'po' (spot).

3: N. W. = 32; T. W. = 41.

Apwun (apron), band, belt, buckle, button hook, *buttons*, chain, c'other (clothes), *coat*, collar, dwawers (drawers), dwess (dress), garter, handkerchief, hooks, leggings, *mittens*, nightgown, overalls, *pocket*, wibbin (ribbon), womper (romper), wubbers (rubbers), safety pin, sandles, shirt, shoes, skirt, s'eevin' bag (sleeping bag), s'ippers (slippers), 'dockin' (stocking), fweater (sweater), wapper (wrapper). Hole, 'bot (spot), 'dain (stain), tear.

4: N. W. = 3; T. W. = 44.

Material, socks, sunbonnet.

2a. Toilet.

1½: T. W. = 3.

Ba' (bath), comb, soa' (soap).

3: N. W. = 7; T. W. = 10.

Bath, bwush (brush), cotton, powder, *soap*,
tangle, toothbrush, toothpowder, towel.

4: N. W. = 1; T. W. = 11.

'narl (snarl).

3. Food.

1½: T. W. = 6.

Bru' (bread), mu' (milk), o' ju' (orange
juice), tado (potato), sa' (salt), water.

3: N. W. = 50; T. W. = 56.

Apple, apple-sauce, bacon, banana, beets, berries, biscuit, *bread*, broth, bun, butter, cake, carrots, cheese, cherries, chocolate, coffee, corn, corn bread, corn f'akes (corn flakes), swacker (cracker), cweam (cream), Cweam of Wheat (Cream of Wheat), cwumb (crumb), cwust (crust), doughnuts, dwink (drink), egg, gwaham-cwackers (graham crackers), gwapes (grapes), ice cweam (ice cream), juice, junket, maca'oni (macaroni), meat, *milk*, nut, oatmeal, owange (orange), peach, peanut, pear, peas, *tato* (potato), puddin', pumpkin, waspberry (raspberry), wice (rice), *salt*, soup, 'drawberry (strawberry), sugar, tapioca, tea, toast.

4: N. W. = 9; T. W. = 65.

Beans, cereal, cookies, food, jelly, lettuce, onions, *potato*, prunes, radish.

3a. Eating.

1½: T. W. = 3.

Bee (bib), di' (dish), boon (spoon).

3: N. W. = 17; T. W. = 20.

Bell, *bib*, bweakfast (breakfast), cwack (crack), cup, dinner, dinin' table, dinin' woom (dining room), *dish*, fork, knife, lunch, napkin, pitcher, p'ate (plate), supper, table c'oth (cloth), tea-kettle, tway (tray).

4: N. W. = 4. T. W. = 24.

Bowl, desert, meal, nibble.

4. Play and occupations.

1½: T. W. = 14.

B'ock (block), boa' (boat), book, bo' (box), car' (card), dar (jar), papy (paper), 'dick (stick), 2 dolls [2 dolls, 2 animals].

3: N. W. = 48, T. W. = 58.

Ball, balloon, bang, bank, beads, *box*, bubbles, cans, *card*, cart, catalog, c'othespins (clothespins), cwayons (crayons), dance, doll, drum, game, *jar*, magazine, moosic (music), noise, page, pail, paints, paper, peg, pencil, penny, picture, poem, postcard, pwesent (present), wace (race), wattle (rattle), sandpile, shovel, s'ed (sled), song, 'bool (spool), 'dring (string), 'dory (story), tower, toys, tweasure (treasure), valentine, wagon, wheel, wheelbarrow, words, 1 animal, [1 animal].

4: N. W. = 28, T. W. = 85.

Bar, b'ack board (blackboard), buttonin' frames, captain, circle, creature, croquet, cylinders, exercises, insets, leader, letters, line, map, mark, p'asticine (plasticine), pole, powession (procession), 'gool (school), see-saw, slide, soap-bubbles, 'gware (square), swing, tag, Teddy bear, triangle, tricks.

4a. Experiences.

3: T. W. = 7.

Dweam (dream), hug, kiss, nap, west (rest), shadow, s'leep, (sleep).

4: N. W. = 3; T. W. = 10.

Journey, picnic, trip.

II. Indoor Environment.

1½, 14; 3, 123; 4, 149.

1. House and Furnishings.

1½: T. W. = 12.

Ba' (bathtub), be' (bed), cedy (cellar), chair, c'o (clock), coal, door, fwoy (floor), house, key, 'ight (light), tado (table).

3: N. W. = 95; T. W. = 107.

Ashes, basin, basket, bathwoom (bathroom), bath tub, *bed*, bedwoom (bedroom), b'anket (blanket), book case, bottle, bwoom (broom),

bureau, candle, candle-dick (candle-stick), ceilin', *cellar*, chamber, chest, chimney, *c'ock* (clock), *c'oset* (closet), *c'oth* (cloth), cork, couch, cwib (crib), curtain, cushion, desk, dwawer (drawer), dust, duster, envelope, fire, fire-p'ace (fire-place), *floor*, furnace, gas, g'ass (glass), g'ue (glue), hall, hammer, hammock, hamper, handle, hanger, heater, high chair, home, ink, lamp, *light*, lookin' g'ass (looking glass), mantle piece, match, mirror, nail, needle, noospaper (newspaper), oven, pan, parlor, pen, pimamo (piano), pillow, pipe, post, woof, (roof), woom (room), wope (rope), wug (rug), scissors, 'green (screen), 'grew (screw), sewin' machine, shades, sheet, shelf, sideboard, sofa, 'dairs (stairs), 'damp (stamp), 'drap (strap), 'dove (stove), *table*, telephone, simble (thimble), thread, twunk (trunk), tub, typewriter, onbrella (umbrella), wandah (verandah), wall, wall paper, wash 'dand (wash stand), waste basket, weighin' machine, window, wire, wood.

4: N. W. = 22; T. W. = 127.

Axe, bench, board, bundle, cupboard, electricity, f'ames (flames), mop, package, pantry, *piano*, porch, refrigerator, register, rockin' chair, saw, s'eevin' porch (sleeping porch), 'dopper (stopper), 'dudy (study), suit case, tank, tools, varnish.

2. Others' Belongings.

1½: T. W. = 2.

Ba' (bag), mu' (muff).

3: N. W. = 14; T. W. = 16.

Bag, camera, fan, g'asses (glasses), g'oves (gloves), hairpin, hatpin, ladder (lather), money, *muff*, necktie, purse, sack, abenders (suspenders), trousers, watch.

4: N. W. = 6; T. W. = 22.

Bracelet, film, overcoat, revolver, suit, trimmin'.

III. Outdoor Environment.

1½, 26; 3, 199; 4, 283.

1½: T. W. = 5.

Baul (barrel), car, go-car' (go-cart), sleigha (sleigh), too-too (choo-choo).

3: N. W. = 42; T. W. = 47.

[Arch], automobile (automobile), barn, *barrel*, bicycle, bonfire, buildin', cawwaige (carriage), church, circus, engine, factory, fair, farm, fence, field, f'ag (flag), gate, *go-cart*, [Harvard 'quare (square)], [Harvard 'dreet (street)], [hurdy-gurdy], labwotory (laboratory), mail-box, path, woad (road), woller 'gates (roller skates), sail boat, seat, *sleigh*, 'moke (smoke), 'dation (station), 'deam boat (steam boat), 'deam engine (steam engine), 'dore (store), subway, ticket, twack (track), *twain*, (train), twolley-car (trolley-car), tunnel, waterin' cart, lard (yard).

4: N. W. = 36; T. W. = 79.

Baggage-car, bran, bridge, bridle, bungalow, dinin' car, Elm dreet (street), fire-engine, fire-works, flytrap, fountain, garage, garden-house, grain, grind 'done (grind stone), gun, hay, headlight, henhouse, kite, mail, observation-car, parade, reins, roadside, runabout, saddle, 'gare-crow (scare crow), sidewalk, 'moker (smoker), deeple (steeple), teams, trap, luniversity (university), whip, woodshed.

1a. Geography.

3: N. W. = 10.

City, country, town. 5 towns, 1 state, 1 country.

4: N. W. = 13; T. W. = 23.

Countries, 'date (state), village, world. 5 towns, 3 states, 1 country.

2. Sky and Landscape.

1½: T. W. = 3.

Moo' (moon), 'gy (sky), 'now (snow).

3: N. W. = 26; T. W. = 29.

Air, bank, c'ouds (clouds), dirt, ground, hill, ice, lake, *moon*, mountain, mud, ocean, pond, puddle, wain (rain), wiver (river), wock (rock), sand, shade, 'bring (spring), 'dars (stars), sun, sunshine, sunder (thunder), valley, weather, wind.

4: N. W. = 14; T. W. = 43.

Brook, island, lightnin', pool, rain-bow, sea, shower, 'dones (stones), 'dorm (storm), 'dream (stream), sunset, Venus, waves, whirl.

3. Plants.

1½: T. W. = 2.

F'ower (flower), g'ass (grass).

3: N. W. = 21; T. W. = 23.

Bark, buttercup, daffodil, daisy, dandelion, fern, f'owerpot (flowerpot), *gwass* (grass), gwove (grove), lilac, leaf, log, oakball, oaks, p'ant (plant), pollen, wagweed (ragweed), wose (rose), seed, sorns (thorns), twee (tree), violet.

4: N. W. = 57; T. W. = 80.

Acorn, acorn cups, anemone, apple tree, b'ossom (blossom), b'ue-berry (blue-berry), b'ue-eyed grass, b'uets (blueets), branches, briar, bud, bushes, cabbages, chickweed, c'over (clover), column flower, coreopsis, corn, cur-rants, evenin' primrose, f'eabane (flea-bane), forget-me-not, four-o'clock, garden, gooseber-ries, gourds, grapevine, horse-nettle, lily, moss, mustard, neckweed, *Nothoscordum*, peach tree, pear tree, pepper-grass, pine, pine-cone, pine-needle, poison ivy, poppy, poppy mallow, root, shepherd's purse, 'bring booty (spring beauty), 'dem (stem), sumach, sweet peas, sistle (thistle), toad f'ax (toadflax), Venus' lookin' glass, vine, weeds, wheat, woods, wood sorrel, yellow puccoon.

4. Animals.

a. Insects.

3: T. W. = 10.

Ant, bee, beetle, bug, bumblebee, butter f'y, caterpillar, f'ies (flies), mogito (mosquito), wasp.

4: N. W. = 19; T. W. = 29.

Cockroach, cricket, cutworm, drone, f'ea, (flea), grass-hopper, grub, honeybee, insect, ladybug, moss (moth), p'ant lice (plant lice), queen bee, walkin' dick (walking-stick), worker bee. Bee-hive, buzz-buzz, honey, swarm.

b. Other Invertebrates.

3: T. W. = 3.

'Nail (snail), 'bider (spider). Shell.

4: N. W. = 6; T. W. = 9.

Angleworm, crawfish, daddy-long-legs, worm. Cobwebs, 'bider webs (spider webs).

c. Fish. Amphibians.

Reptiles.

1½: T. W. = 1.

Fwog (frog).

3: N. W. = 7; T. W. = 8.

Fish, *frog*, gold fish, pollywog, 'nake (snake), toad, turtle. Fish food.

4: N. W. = 6; T. W. = 14.

Horned toad, lizard, salamander, tadpole, terrapin. Aquarium.

d. Birds.

1½: T. W. = 5.

Bu (bird), hen, wootie (rooster). Caw-caw (what the hen says), oo-oo (what the rooster says).

3: N. W. = 22; T. W. = 27.

B'ue jay (blue jay), chickens, duck, eagle, English 'barrow (sparrow), goose, gwackle (grackle), hawk, junco, pigeons, sea-gull, fwan (swan), turkey, wood-pecker. Bill, cages, dust baths, feader (feather), gobble (what the turkey says), nest, quack, wing.

4: N. W. = 21; T. W. = 48.

Bobwhite, chewink, chicadee, cock, dickcissel, dove, ducklin', king bird, meadow lark, mockin' bird, night hawk, parrot, peacock, Phoebe, robin, whippoorwill, wren. Chicadee-dee, droppins, whistle. Friendly (a pet hen).

e. Mammals.

1½: T. W. = 9.

Cow, do' (dog), horsey, kitty, puppy. Ba! Ba! (What the dog says), moo, myow, tai' (tail).

3: N. W. = 34, T. W. = 43.

Bear, bunny, calf, camel, cat, deer, *dog*, donkey, elephant, fox, goat, *horse*, kittens, lamb, lion, monkey, mouse, oxen, pig, pussy, wab-bib (rabbit), wat (rat), sheep, gunk (skunk), 'gwirrel (squirrel), tiger. Bah (what the sheep says), fur, horns, pet, *tail*, umph (what the pig says). Names of one horse, two dogs and [two dogs].

4: N. W. = 15; T. W. = 58.

Baboon, bat, Belgian hare, buffalo, bull, chipmunk, guinea pig, jack rabbit, mool (mule), pony, 'possum, racoon, sea lion. Wool, name of one cow.

IV. *People.*

1½, 12; 3, 57; 4, 85.

1½: T. W. = 12.

Baby, boy, girl, lady, Mamma, ma' (man), Papa. [four children, one adult].

3: N. W. = 50; T. W. = 57.

Aunt, bruder (brother), carpenter, child, c'own (clown), cousin, fader (father), fwi-end (friend), gwandma, gwandpa, *man*, Miss, Missis, Mister, mudder (mother), people, sis'er (sister), teacher, uncle, visitors. 4 children, 6 adults; [4 children, 17 adults].

4: N. W. = 49; T. W. = 85.

Baker, cook, conductor, doctor, driver, family, fisherman, grandchildren, iceman, person, policeman, porter, son, 'dudent (student), sugar plum. 16 children, 18 adults.

V. *Words from Pictures and Stories.*

1½, 14; 3, 28; 4, 69.

Bah* (for sheep), bear,* cu'* (buttercup), fwy* (butter fly), du'* (duck), fo'* (fox), gobb* (for turkey), munye* (monkey), mou'* (mouse), owl, quack,* 'at* (rat), r'r (for lion), 'nail* (for snail), umph* (for pig).

3: N. W. = 26; T. W. = 28.

Alligator, angel, bower, boogle (bugle), China, cwown (crown), fairy, Indian, Japanese, king, lambikin, Mallard duck, market, oriole, queen, weindeer (reindeer), wobbers (robbers), thrush, wolf. 7 proper nouns.

4: N. W. = 41; T. W. = 69.

Armadillo, badger, crab, crocodile, dragon, dwarf, enemy, ferret, giants, giraffe, heaven, hedge-hog, jackal, kangaroo, porcupine, pot, shepherd, 'bider monkey (spider monkey), 'birit (spirit), tailor, unicorn, whale, wild cat, witch, zebra. 16 proper nouns.

* These words were learned from real life by her third year, so they are to be found under the words connected with animals in the three-year-old vocabulary. They are not to be counted in this division after the 1½-year vocabulary.

VI. *Abstract, Time, Position, etc.*

1½, 2; 3, 53; 4, 100.

1. Time.

3: T. W. = 10.

Birthday, Christmas, day, minute, mornin',
nighttime, o'clock (o'clock), 'bring (spring),
time, to-day.

4: N. W. = 15; T. W. = 25.

Afternoon, age, bedtime, evenin', half-past,
month, night, summer, to-morrow, to-night,
week, winter, while, lear (year), lesterday
(yesterday).

2. Position.

3: T. W. = 11.

Back, bottom, corner, cover, edge, end, fwont
(front), middle, p'ace (place), side, top.

4: N. W. = 3; T. W. = 14.

Aginnin' (beginning), row, tippity-top.

3. Quantity.

1½: T. W. = 1.

Pieces.

3: N. W. = 6, T. W. = 7.

Bit, dwops (drops), half, inches, part, pile.

4: N. W. = 7, T. W. = 14.

Amount, lot, miles, numbers, pairs, rest, 'beck
(speck).

4. Indefinite.

3: T. W. = 7.

Anybody, anysing (anything), everybody,
everysing (everything), nossing (nothing),
somebody, somepy (something).

4: N. W. = 1, T. W. = 8.

Nobody, *somesing* (something).

6. Abstract Nouns.

1½: T. W. = 1.

Pity.

3: N. W. = 17; T. W. = 18.

Attention, color, 'fusion (confusion), enough,
fun, heat, help, joke, kind, matter, adake
(mistake), name, 'mell (smell), 'duff (stuff),
sing (thing), twouble (trouble), way.

4: N. W. = 21; T. W. = 39.

Account, adventures (adventures), care, fault, aparison (comparison), dryness, aberiments (experiments), feelin's, harm, help, joy, life, mind, question, self, sight, sign, sort, taste, sought (thought), work.

VERBS

1½, 10; 3, 246; 4, 380.

1½: T. W. = 10.

Cau' (caught), c'y (cry), dan' (dance), fall, gone, kiss, look, pa' (pat), see, sin' (sing).

3: N. W. = 236, T. W. = 246.

Am, amoose (amuse), answer, aren't, wang-in' (arranging), ask, bark, be, belong, bite, b'ess (bless), b'ow (blow), bodder (bother), bounce, bweak (break), bwing (bring), bwush (brush), build, bump, burn, burst, button, buy, call (cry), call (visit), can, care, carry, *catch*, change, chase, chew, c'ap (clap), c'ean (clean), c'imb (climb), comb, come, cook, cough, could, count, cover, cweep (creep), cwiss (cross), cwow (crow), *cwy* (cry), cuddle, cut, *dance*, die, dig, do, dwaw (draw), dweam (dream), dwess (dress), dwink (drink), dwop (drop), dump, dust, eat, aguse (excuse), fasten, feed, feel, fight, fill, find, fit, fix, f'y (fly), fold, gargle, get, give, g'ue (glue), *go*, gwab (grab), gwow (grow), guess, hang, happen, hatch, have, hear, help, hide, hit, hold, hook, hop, hope, howlin', hug, hunt, hurt, hurry, is, isn't, jump, keep, kick, kneel, knock, know, laugh, leak, lean, leave, let, lie (recline), lift, like, listen, live, lock, lose, mail, make, march, mark, mean, measure, meddle, mend, might, mind, mix, muss, named, need, obey, open, ought, pack, paint, paste, *pat*, gay, peek, pick, pin, pinch, p'ay (play), poke, pound, pour, pwess (press), pwick (prick), pull, push, put, wain (rain), wap (rap), weach (reach), wead (read), west (rest), wide (ride), wing (ring), wock (rock), wub (rub), wun (run), sail, save, 'gratch (scratch), see-saw, send, sew, shave, shine, shoo, show, shut, *sing*, sit, s'leep

(sleep), s'ide (slide), 'mash (smash), 'mell (smell), 'neeze (sneeze), 'now (snow), 'nuggle (snuggle), soil, 'bank (spank), 'bill (spill), 'bit (spit), 'b'ash (splash), 'gweak (squeak), 'gweeze (squeeze), 'dand (stand), 'day (stay), 'dep (step), 'dick (stick), 'ding (sting), 'dop (stop), 'duff (stuff), 'dumble (stumble), abose (suppose), fwallow (swallow), fwep (sweep), fwim (swim), take, talk, tangle, taste, tear, tell, sank (thank) sink (think), frow (throw), tickle, touch, twy (try), tumble, turn, unbuckle, undo, undwess (undress), unfasten, unlock, unwound, visit, wait, wake, walk, want, was, wash, watch, wave, wear, weigh, went, wet, whistle, wiggle, will, wind, wipe, wonder, would, wite (write), lell (yell).

4: N. W. = 134; T. W. = 380.

Acquainted, attendin', back, bake, beat, begged, believe, bend, b'ast (blast), b'eed (bleed), borrow, burried, breathe, butter, buzz, concerned, crack, crawl, crinkle, decorated, 'acided (decided), 'abise (despise), 'agusted (disgusted), drag, drip, drive, dry, dye, acourage (encourage), evaporate, explain, fishin', flap, float, forget, galop, gnaw, gobble, greet, growl, grunt, grumble, hand, harness, hate, haul, imagine, avite (invite), lay, learn, lick, light, love, manage, married, meet, moo, move, must, nail, nibble, nip, nod, order, own, peck, p'ant (plant), poison, pop, prance, atendin' (pretending), punch, punish, quarreled, raised, rattle, represent, 'member (remember), rescue, rinse, rob, roll, rush, say, 'gamper (scamper), 'grape (scrape), 'gream (scream), 'grub (scrub), 'guttle (scuttle), seem, sell, set, settle, sharpen, shook, shoot, sigh, 'gin (skin), 'gip (skip), s'ips (slips), 'niffin' (sniffing), sound, 'brang (sprang), 'brinkle (sprinkle), 'gwashin' (squashing), 'gwirm (squirm), 'dart (start), 'dealin' (stealing), suck, suit, swell, swing, tease, tip, treat, travel, troopin', tug, twist, underdand (understand), untie, used, vaccinate, wade, warm, waste, weed, weep, whip, whisper, whoop, widder (wither), wish, work.

PRONOUNS

1½, 0; 3, 30; 4, 32.

I. *Personal.*

3: T. W. = 18.

He, her, hers, him, his, I, it, me, mine, my, myself, she, they or dey, them or dem, we, you or lou, your, yours.

4: N. W. = 2; T. W. = 20.

Our, us.

II. *Relative.*

3: T. W. = 1.

What.

III. *Interrogative.*

3: T. W. = 3.

What, which, who.

IV. *Demonstrative.*

3: T. W. = 4.

Dat or that, dese or these, dis or this, dose or those.

V. *Adjective.*

3: T. W. = 4.

All, odder (other), some, same.

ADJECTIVES

1½, 10; 3, 139; 4, 232.

I. *Article.*

3: T. W. = 1.

A.

II. *Demonstrative.*

3: T. W. = 12.

Another, any, each, every, odder (other), same, some, such, dat or that, dese or these, dis or this, dose or those.

4: N. W. = 1; T. W. = 13.

Alike.

III. *Interrogative.*

3: T. W. = 2.

What, which.

IV. *Quantitative.*

3: T. W. = 13.

All, double, foo (few), last, many, most, several. One, two, free (three), four, five, hundreds.

4: N. W. = 10; T. W. = 23.

Both, first, next, none, whole. Six, seven, eight, nine, ten.

V. *Qualitative.*

1½, 10; 3, 111; 4, 193.

A. Color.

3: T. W. = 15.

B'ack (black), b'ue (blue), brown, gold, green, owange (orange), pink, purple, wed (red), white, lellow (yellow). Bwight (bright), colored, dark, shiny.

4: N. W. = 7; T. W. = 22.

Grey, rosy, 'garlet (scarlet), tan, violet. Light, 'driped (striped).

B. Spatial.

3: T. W. = 13.

Big, far, fat, full, high, large, little, long, low, near, small, 'deep (steep), tiny.

4: N. W. = 8; T. W. = 21.

Deep, great, level, monstrous, short, thin, tall, wee-wee.

C. Sense.

1½: T. W. = 1.

Co' (Cold).

3: N. W. = 14; T. W. = 15.

Cold, cool, gweasy (greasy), hard, hot, icy, 'dicky (sticky), soppin', soft, sore, 'diff (stiff), sunny, sweet, warm, wet.

4: N. W. = 11; T. W. = 26.

Buttered, b'oody (bloody), curly, firm, heavy, moist, rough, s'ippery (slippery), 'mooth (smooth), soapy, sour.

D. General.

1½: T. W. = 9.

Cunnin', dirty, funny, goo' (good), nice, poo' (poor), pretty, s'eedy (sleepy), tire (tired).

3: N. W. = 59; T. W. = 68.

Afwaid (afraid), alone, ashamed, as'leep (asleep), adonished (astonished), awake, awful, bad, bare, best, busy, careful, c'ean (clean), c'oudy (cloudy), comforble (comfortable), [coot (cute)], dangevous (dangerous), darlin', dead, dear, unpointed (disappointed), uncouraged (discouraged), dusty, empty, fast, fine, fwiendly (friendly), g'ad (glad), *good*, happy, holey, hungwy (hungry), kind, lovely, merry, naughty, noo (new), old, open, *poor*, queer, quiet, wight (right), weady (ready), wubber (rubber), shut, sick, *s'leepy* (sleepy), s'ow (slow), sorry, south, aprised (surprised), 'dupid (stupid), tender, terrible, sirsty (thirsty), tight, *tired*, wide open, windy, wong (wrong), withered.

4: N. W. = 57; T. W. = 124.

Alive, angry, anxious, barefoot, booful (beautiful), brass, brave, breezy, careless, cheerful, c'everest (cleverest), common, delighted, diffrunt (different), eager, early, excited, fierce, f'uffy (fluffy), gay, gentle, gwowed-up (grown-up), horny, interested, iron, jolly, late, left, live, lonely, loose, north, own, precious, prickly, prompt, proud, quick, real, rich, ripe, rotten, safe, 'gared (scared), set, silver, 'bandy (spandy), 'bendid (splendid), 'dale (stale), 'dill (still), sure, tame, west, wild, whirlin', wooden, loung (young).

ADVERBS

1½, 6; 3, 62; 4, 102.

I. Time.

3: T. W. = 11.

After, again, always, ever, first, never, now, once, sometimes, nen (then), where.

4: N. W. = 7; T. W. = 18.

Ago, before, finally, soon, 'dill (still), usually, let (yet).

II. Place.

1½: T. W. = 3.

Down, dere (there), up dar (upstairs).

3: N. W. = 19; T. W. = 22.

Along, anywhere, away, behind, downdairs

(downstairs), here, in, indoors, inside, near, next, oss (off), on, out, outdoors, outside, over, under, up, *upstairs* (upstairs).

4: N. W. = 12; T. W. = 34.

Around, across, back, everywhere, far, farther, nearby, somewhere, through, underneath, upside down, way.

III. *Manner.*

3: T. W. = 13.

Carefully, exactly, horseback, how, nicely, quickly, wight (right), s'owly (slowly), so, too, togedder (together), well, why.

4: N. W. = 10; T. W. = 23.

Anyway, awfully, apparently, better, busily, fast, headfirst, promptly (promptly), perferly (perfectly), terribly.

IV. *Degree.*

1½: T. W. = 1.

All.

3: N. W. = 10; T. W. = 11.

Almost, as, else, enough, just, like, more, quite, too, very.

4: N. W. = 9; T. W. = 20.

A little, either, even, mostly, much, only, pretty, rather, becially (especially).

V. *Modal.*

1½: T. W. = 2.

No, p'e' (please).

3: N. W. = 3; T. W. = 5.

Not, perhaps, *p'ease* (please), les or zes (yes).

4: N. W. = 2; T. W. = 7.

Maybe, possibly.

PREPOSITIONS

1½, 0; 3, 21; 4, 23.

3: T. W. = 21.

About, across, after, against, before, back of, behind, beside, between, by, for, from, in, of, off, on, through, to, under, up, with.

4: N. W. = 2; T. W. = 23.

Except, without.

CONJUNCTIONS

1½, 0; 3, 7; 4, 8.

3: T. W. = 7.

And, because, but, if, so, than, whedder (whether).

3: N. W. = 1; T. W. = 8.

Or.

INTERJECTIONS

1½, 5; 3, 9; 4, 13.

1½: T. W. = 5.

Bye (good-bye), mornee (good-morning), 'night (goodnight), h'llo (hello), 'owdo (howdo).

3: N. W. = 4; T. W. = 9.

Goodby, good-morning, good-night, hello, oh, ouch, peek-a-boo, why.

4: N. W. = 4; T. W. = 13.

All aboard, dear me, ha-ha-ha, well.

The Grammar of the Vocabularies.

E had 145 words in her vocabulary at eighteen months, 1205 words at three years and 1870 words at four years. All the 18-month terms are found in both the later vocabularies. Thirty-one proper nouns and three other words, "arch," "hurdy-gurdy" and "cute" she knew at three but not at four.

Table of the Parts of Speech

	Number of words			Per cent			Per cent of Increase
	1½	3	4	1½	3	4	From 3 to 4
Age in years.....							
Nouns.....	114	691	1080	78.6	57.2	57.6	56.3
Verbs.....	10	246	380	6.8	20.5	20.4	54.4
Pronouns.....	0	30	32	0	2.5	1.3	6.7
Adjectives.....	10	139	232	6.8	11.6	12.9	66.9
Adverbs.....	6	62	102	5.4	5.1	5.4	64.5
Prepositions.....	0	21	23	0	1.7	1.3	9.5
Conjunctions.....	0	7	8	0	0.6	0.4	14.3
Interjections.....	5	9	13	3.4	0.8	0.7	44.4
Total.....	145	1205	1870	100.	100.	100.	55.2

The proportions of the different parts of speech used by E at the three ages correspond closely to the results in other child vocabularies. The percentages of increase from her third to her fourth year are interesting. The increase in the whole vocabulary was 55 per cent; verbs and nouns show this exact proportion. She learned more new adverbs and adjectives proportionally than of any of the other parts of speech, 64.5 and 66.9 per cent respectively. Of pronouns and prepositions she added only two each to her vocabulary, and but one conjunction. At three she had mastered practically all of the prepositions and pronouns that she will ever use, and enough conjunctions to suffice her very well.

There are many words in common use among adults which E does not include in her vocabulary. Of auxiliary verbs she used "can," "could," "might," "will" and "would" at three, but "may," "shall" and "should" have not appeared in her four-year-old vocabulary. O'Shea (7) says that "'except,' 'although,' 'unless,' 'lest,' 'in order that,' 'nor,' 'whether,' 'or'" are not "employed with precision before the fifth year." E does not use "although," "unless," "lest," "in order that" or "nor" at all. She used "whether" at three, but always in connection with "if." "I don't know whedder if a crawfish got away." "Except" and "or" are used correctly by her at four. O'Shea (8) says again, "It seems for a long time children avoid the *less* and *least* and *fewer* and *fewest* constructions." E uses none of them; at 51 months she asked me what "less" meant after I had just employed the term. The only relative she uses is "what." The only article is "a," probably because "the" is hard for her to pronounce.

E has made certain improvements on the English language. She began to use "she" and "our," but at about two and a half she substituted "her" and "we'er." At 51 months she uses the correct terms about as often as these incorrect ones. She still occasionally uses "I'm are" for "I am." "More better" seems to her stronger than the conventional term. Irregular verbs give her trouble, although as a rule she does not make mistakes.

The most striking characteristics of E's baby pronunciation were clipping the beginnings and endings of words, and changing "er" to "ie." This was corrected in a few months, but the majority of mispronunciations were clung to until she was past four. Her four-year-old pronunciation was only slightly better than her two-year-old, except that in the new words she learned, she pronounced her "r's" correctly.

We did not correct her until she was 3 years and 9

Pronunciation

The way in which E mispronounced certain sounds is indicated in the following table

At 18 months	At 3 years	At 4 years	At 4 yrs. 3 mos.
ch = t, sometimes	corrected		
	ew = oo	Same	Same
	g dropped in "ing"	Same	Same
l omitted after b, c, f, p, s	Same	Corrected after c and f	Corrected entirely
r pronounced as w	Same, except medial "r"	Same, except in new words	Corrected entirely
s omitted before m and n	Same	Same	Sometimes correct
	sk changed to g	Same	Sometimes correct
sp changed to b	Same	Same	Sometimes correct
st changed to d	Same	Same	Sometimes correct
	sw = fw	Same	Corrected
	th = s or f	Same	Sometimes correct
dh = d	Sometimes d, sometimes dh	Same	Much improvement
	v = w in "very", otherwise correct	Same	Corrected
	y = l, except in "yes" = "zes", "les" or "yes"	Same	Sometimes correct

months old and then I tried to induce her to improve her pronunciation. But she showed no interest in such efforts, often saying "I like to say them wong." A month later I noticed her saying "very" instead of "wery," and "radish," a new word. So I tried again and met much better success. She enjoyed the drill for a few weeks and then became bored with it. There seemed to be a time of spontaneous improvement then, at three years and ten months, when she mastered "r" s in new words, "l" after "c" and "f," and "v" in "very." Now at four years and three months she is improving again, pronouncing all "l" s, "s" before "w," all her "r" s, and if she tries "th," "dh," "sm," "sn," "sp," "sk," "st," and "y." "Ew" is about the only sound that seems beyond her.

The Content of the Vocabularies

Although in a general way all the parts of speech in the different vocabularies show mental development, none of them are as concrete and specific as the nouns. The table of nouns follows:

Table of Nouns

	Number of words			Per cent			Per cent of increase from 3 to 4
	1½	3	4	1½	3	4	
Age in years.....	1½	3	4	1½	3	4	
I. Personal Experiences..	46	231	294	40.4	33.5	27.2	33.0
1. Body and Health. .	11	39	55	9.6	5.6	5.1	41.1
2. Clothes.....	12	51	55	10.5	7.4	5.1	7.0
3. Food.....	9	76	89	7.8	11.0	8.3	17.1
4. Play.....	14	65	95	12.3	9.6	8.6	46.0
II. Indoor Environment..	14	123	149	12.2	17.7	13.9	21.3
III. Outdoor Environment.	26	199	383	22.8	28.7	34.6	92.0
1. Civilization.....	5	56	101	4.4	8.2	9.4	80.4
2. Sky, Landscape....	3	29	43	2.7	4.0	4.0	48.0
3. Plants.....	2	23	80	1.7	3.4	7.4	284.0
4. Animals.....	16	85	159	14.0	13.1	14.6	87.0
IV. People.....	12	57	85	10.5	8.4	7.8	49.4
V. Words from pictures and stories.....	14	28	69	12.3	4.0	6.5	146.4
VI. Abstract, time, position, etc.....	2	53	100	1.7	7.2	9.4	88.7
1. Time.....	0	10	25	0	1.5	2.4	150.0
2. Position.....	0	11	14	0	1.7	1.3	27.0
3. Quantity.....	1	7	14	0.85	1.0	1.3	100.0
4. Indefinite.....	0	7	8	0	1.0	0.8	14.3
5. Abstract.....	1	18	39	0.85	2.5	3.6	116.6
Total.....	114	691	1080	100.	100.	100.	56.3

When E was 18 months old, her personal experiences were of the most concern to her; they comprise 40 per cent of all her nouns. Of these, the parts of the body furnish 9.6 per cent of all her nouns. Clothes supply 10.5 per cent, while food and eating have a smaller representation, 7.8 per cent. Play and occupations are responsible for 12 per cent. As to the relative influence of indoor and outdoor environment, indoors contributed 12 per cent and outdoors 23 per cent. People are important to a baby—they furnish 10.5 per cent of E's nouns. Words from stories and pictures comprise 12 per cent; these are all names of animals or the sounds of animals, except one, which is the name of a flower. She used

only one abstract term "pity," and one for quantity—"pieces"; these represent 1.7 per cent.

At three years, personal experiences, although still most important to the child, had dropped to 33.5 per cent. Words denoting parts of the body decreased from 9.6 per cent to 4.5 per cent, clothes from 10.5 per cent to 7 per cent, play and occupations from 12 to 9.6 per cent. Food rose from 7.8 per cent to 11 per cent—the highest at any age. Indoor environment rose from 12 to 17.7 per cent and outdoor environment from 2.3 to 28.7 per cent. People were slightly less important, furnishing 8.4 per cent instead of 10.5 per cent. Words from stories have decreased from 12 per cent to 4.5 per cent. Abstract terms, and words for time, quantity, etc. have greatly increased—from 1.7 per cent to 7.2 per cent.

At four, E's most important interests were in outdoor environment, for they represent 35 per cent. Personal experiences have dropped to 27 per cent. Words denoting parts of the body have decreased to 3.6 per cent, but those connected with health and disease have increased. Clothes have dropped to 5 per cent, food to 8 per cent and play and occupations to 8.6 per cent. Indoor environment decreased from 17.7 per cent to 13.9 per cent. The outdoor environment of civilization increased from 8 to 9 per cent; animals from 13 to 14.6 per cent. Plants have made the greatest increase of any subject: the 7.4 per cent represents a high tide of interest in flowers which occurred just before she was four. Terms for people have decreased slightly—from 8.4 to 7.8 per cent. Words from stories rose from 4.5 to 6.4 per cent. Words for time, position, etc., and abstract words increased from 7.2 per cent to 9.4 per cent.

The column showing the increase from the third to the fourth year is illuminating. The increase of all the nouns was 56 per cent; that is, using the three-year-old vocabulary as a basis, E used 56 per cent more nouns in her fourth year than in her third.

Therefore 56 per cent is the standard of increase; if she had learned words equally from all sources there would be a regular increase of 56 per cent for each division. Let us see what was the case. Personal experiences increased 33 per cent, indoor environment 21 per cent, outdoor environment 92 per cent, people 49 per cent, stories 146 per cent and abstract, time, etc. 88.7 per cent. The subjects under personal experiences show wide variations; parts of the body increased 38 per cent, words relating to health 100 per cent, clothes only 7 per cent, food but 17 per cent, while play and occupations came near the standard with 46 per cent. Words for the

house and furnishings increased only 18.6 per cent. The outdoor environment of civilization increased 80 per cent. Geography shows a great augmentation — 130 per cent. Sky and landscape are near the standard with 48 per cent. Animals go well beyond it with 87 per cent. But the greatest increase of all is in plants — 284 per cent. Terms for time have increased 150 per cent, and quantity 100 per cent. Few words denoting position were added, only 27 per cent. All but one of the indefinite nouns were used in the three-year-old vocabulary, so they increased but 14 per cent. Abstract words increased 116 per cent.

We are now in a position to answer some of the questions with which we started. This child got her words at first largely from personal experiences and from outdoors with smaller proportions of words denoting indoor environment, and people, and words from stories. At three years personal experiences were still first, and outdoors second; indoor environment contributed more than at 18 months, but people and especially stories furnished less. At four years outdoor environment had the largest share of her nouns; personal experiences, indoor environment and people were all less important than ever before. Abstract words showed a large increase at each succeeding age.

Thus we see a decrease in the importance of personal experiences and an enlargement of horizon. By her third year E had learned most of the parts of the body that were of interest to her, the names of her clothes, of her food and the majority of the objects of her indoor environment. Therefore there was little to add in these directions. And there will be little to add in the future except as regards the parts of the body. She is now, at 51 months, asking questions about her internal workings.

It is interesting to find how much outdoors contributes to her vocabulary at every age, and how at four years it surpasses all other elements. Her outdoor environment has been wide and varied, and this is reflected in her speech. Her line of chief interest is plain—nature. She had plenty of opportunity to learn, and she had good teaching, so with her natural bent, her knowledge of animals and plants increased by leaps and bounds. Outdoor environment has limitless possibilities for her future vocabulary especially as regards nature.

Almost all of E's nouns have come from real life. At 18 months when her experience was limited, the proportion of words from stories and pictures was highest — 12 per cent; these were animal terms. At three years, by reason of her wider experience, she had learned from reality most of the

animals that she had known only at second-hand at first, so her words from stories and pictures dropped to 4 per cent. The next year she was told many stories and she had more picture books, both of which factors raised the proportion to 6.5 per cent.

One of the most evident things in the vocabularies is the indication of greater maturity at four than at three. The augmentation of geographical terms 130 per cent shows a widening horizon and the beginning of a conception of space and distance. The augmentation of nouns for quantity 100 per cent, for time 150 per cent and most important abstract terms 116 per cent — all are significant of mental development — of dawning ability to grasp abstract relations.

Boyd (2) has made a study of the words used by his daughter in 1250 sentences at the 2nd, 3rd and 4th years. "The percentage of the total words in the main groups of nouns" * * * "show a relatively increasing use of words relating to parts of the body, dress, the parts and furnishings of the house, country objects, locomotion, plants, facts of time, quantity and position, and abstract ideas; and a relatively decreasing use of words having reference to food, household articles, animals, play and occupations, people and institutions. The reason is generally not difficult to find. There is obvious in some cases the gradual widening of the mental horizon that makes the facts of home life of less importance and turns the attention further afield. In other cases (for example, in the remarkable progress in the use of quantitative terms, which is one of the distinctive features of the fourth year) there is evidently a growth in the power to work with abstract ideas and relations. But why the decline in play words and in words referring to animals? Why again the marked decrease, especially in the fourth year, in words denoting persons of all sorts and particularly official persons, as well as social institutions? There are certainly no other signs of a diminishing interest in such facts, and no deficiency of words relating to them in the complete vocabulary. The explanation would seem to be that verbal expression registers not the greatest interest but the greatest *new interest*."

My results agree with his except in the increase in words relating to the body, dress and house, and a decrease in animal terms. In these respects mine were decidedly the opposite. Part of the divergencies are doubtless due to the difference in the two children and their environments and the rest to our methods. The words used in the 1250 sentences make up 58 per cent of the total vocabulary at three and 40 per cent at four. It is evident that there is a large element of

chance in his results. If he had happened to get the other 60 per cent of words his findings might have been different. It is a pity he does not give the proportions of the different groups in the total vocabularies.

Special Vocabularies

Number

At three, E's notion of counting was "3, 4, 5" which she applied on all occasions. She had no adequate idea of number beyond two, until she was nearly four. Once when she was 45 months old her father asked her how many eggs she had gathered that morning, she answered, "Two and one more." "That makes three," said her father. "No," she persisted, "two and one more." And although she often asked us to count things, she had no desire to learn herself.

Just before she was four she came to her grandmother's and was constantly with her cousin. He had taught himself a good deal about numbers and used to count and count for E's benefit, sometimes when she preferred he would play. But she learned to count to eight, and to really know what the numbers up to six mean—that five is one more than four, six one more than five, that two and two make four, etc. She learned to count from listening to the other child, and studied out the relationships herself. From her 47th to her 49th month she would count up to forty but not correctly. She would count endlessly as she played instead of improvising poetry as she used to do—an example of the suffocating of originality by too early emphasis on school subjects. Fortunately, at 51 months, she has forgotten her absorbing interest in counting and invents conversation for her toy animals, but she has not taken up the poetry again.

Time

At three E used ten nouns denoting time, by four she had more than doubled this number, having a total of twenty-five. At three she used only "today," at four "tomorrow" and "yesterday." At three, she knew "morning" and "night-time," at four, she had added "afternoon," "evening," and "night." At three, the only season she knew was the one then existing, "spring"; at four she talked of summer and winter.

Interesting as the increase in her terms for time is, yet the smallness of her four-year-old vocabulary is striking. It does not include the names of any day or any month. There is nothing in her experience that differentiates one day from

another, or one month from another. Seasons she is beginning to grasp, and the idea of children's ages in years, but of course a year must be a vague conception for her. Her memory does go back a full year for certain things. Time by the clock means nothing to her. She does not know the difference between morning and afternoon. She never can get the names of the meals straight, "supper" being her favorite designation for them all; occasionally she will speak of "mornin' supper" and "evenin' supper." "Last night," "yesterday" and "tomorrow" seem to be getting clear cut to her at 51 months. At 50 months she asked me the names of the days of the week and tried to learn them, but they evidently have very little meaning for her.

Space

E's ideas of space have been and still are very inadequate. Soon after she was three, we traveled from Massachusetts to Oklahoma—a journey of 3000 miles, consuming three days and three nights. Yet sometimes from an upstairs window in Oklahoma she would look out over the prairie and think she saw her grandmother's home in Massachusetts. Shortly after we had traveled back to Massachusetts when she was nearly four, some of the family went in the automobile to a town 20 miles distant, going and coming in one afternoon, E inquired, "Is Ware as far as Oklahoma?"

Color

When E was 21 months old we thought we would teach her colors in a natural way by mentioning them in connection with objects. The result was that color names were added to her vocabulary in profusion, but their application was all askew. So we dropped all reference to colors whatsoever, and she gradually forgot the words. A little later, when she was about 25 months old, she began to learn the colors correctly from her cousin, who at that time showed a great interest in that direction. She must have learned five or six colors from him when she was somewhat over two. At three she had a color vocabulary of eleven names of colors and four related words, and at four, sixteen names of colors and six related words. All of these names were correctly applied to the appropriate colors.

Animals

It is plain that animals are E's specialty. At 18 months her animal terms numbered 31 or 25.4 per cent of all her nouns. At three she used 99, or 14.7 per cent of her nouns; at four

183 or 18 per cent. In the vocabularies of other three-year-olds the actual number of animal terms runs from 14 to 48, or 3 to 6 per cent of the total number of nouns. In the four-year-old vocabularies, the numbers range from 28 to 100, from 4.5 to 8 per cent.

At 18 months one half of E's animal words came from pictures and stories; at three, one-tenth, and at four, one-eighth.

CONCLUSIONS

Finally to come to our last problem — what can we tell of the mental development of a child from her vocabulary — there are two general conclusions. The first is that E's English is far from being established. She is just mastering her pronunciation, she makes mistakes in grammar, she lacks many essential words which she will have to learn later. The natural inference from this would be that language training is all important for her — she should learn to speak first and foremost. Spoken English is the foundation and should be well established before written or printed English is begun. Again it seems reasonable that she should master her mother tongue before learning a foreign language.

The other fact that is made evident by this study is the immaturity of this four-year-old child. Consider the few words for time, the inadequate conception of space, and the remarkably small, although fast increasing number of abstract words. She knows the world about her well in a way — in fact, she knows more animals and flowers than many adults. But a child with only thirty-eight abstract words in her vocabulary is not ready, it seems to me, to understand much reasoning or religion. One gets into trouble in trying to superimpose too elaborate abstract ideas on a limited foundation.

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A STUDY OF A FIVE-YEAR-OLD CHILD

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The following is a study of an unusually precocious child including her vocabulary of 6837 words, and ending with her fifth year. It is in no sense the record of an infant prodigy who has been taught and directed into definite channels but it deals with a purely natural development. The temptation to teach and encourage so responsive a mind has been resisted and no attempt has been made to assist in co-ordinating her accumulating ideas and impressions, so that her mental growth up to the present time has been entirely natural and spontaneous.

So far as the writer knows there is no other published child's vocabulary of this size. No effort has ever been made to teach Elizabeth new words, though being an only child her main association has been with adults. The following list has been compiled solely from her own unaided talk, gathered chiefly while she played alone, talking incessantly to herself, to her dolls, and to imaginary companions. While she unquestionably had but a vague understanding of many of the words she used, I have included none that were not employed by her in a correct sense, showing a general understanding of their meaning.

She is highly imaginative and lives largely in a dream world of her own creation. Her games are nearly all pretense that she is some one else and that she is surrounded by companions, sometimes purely fictitious, though often characters out of books that have been read to her. So her world is peopled with knights and ladies, cow-boys, "cow-girls," soldiers, Indians, and many imaginary friends. She is familiar with a great number of books besides the ordinary child-lore and listens eagerly to any reading, though no effort has ever been made to read her instructive or educational books, but merely to entertain her. She has never heard "baby-talk" and has always enunciated with great precision which, in conjunction with a highly retentive memory, has been an undoubted factor in her acquisition of a vocabulary. The accuracy of her pronunciation has made the more noticeable the few inversions she used—as, for instance, ridiculous for ridiculous, fuge for

huge, ambliance for ambulance, calomre for calomel, miraculous for miraculous, ephelant for elephant, and codly-deliver for cod-liver-oil. With these few exceptions, her speech has always been clear and accurate.

When being read to she asks the meaning of every unfamiliar word, and rarely forgets it, using it thereafter in its proper place. Her memory for persons is also unusual. At the age of eighteen months, she spent the summer among people she did not see again for a year, nor hear spoken of except when she occasionally referred to them herself—yet she perfectly recollected them, both names and faces, on re-seeing them the following summer. She has been rarely asked to memorize anything, but her uncle, for a joke, taught her Herbert Spencer's definition of life at the age of three and a half years. She has never forgotten it, though often months have elapsed without her being asked to say it—and she enunciates every word clearly and distinctly. I give it here not merely to illustrate her power of memory, but still more the correctness of her ear, and her power of clear enunciation, for of course the words themselves are meaningless to her. "Life is a definite combination of heterogeneous changes both simultaneous and successive, in correspondence with external co-existences and sequences."

Many of her forbears have been distinguished men and women, and on both sides, her family have been people of more than the average capacity and cultivation. From an early age she has shown unusual muscular co-ordination, using her fingers daintily and with precision. From her eighth month she used a paper and pencil, drawing recognizable figures. At four years she could illustrate a little story composed by herself. For example, a lady is leading out her dog at night. (You know it is night because of the moon and stars.) She does not see the railroad track and they are run over by an engine. Below is a cemetery with a large stone over the lady's grave and a small one over the dog's. Nothing better illustrates her keenness of observation and her sense of form than her drawings. She will, for instance, try to reproduce her room, with all the furniture in place, and many surprisingly trifling details, and often will make all the rooms in a house in this way, keeping their relative positions. This was never suggested to her but was a spontaneous effort. Also she had some native sense of perspective. There is a great variety in the faces and figures she draws and they show a distinct sense of humor.

The source of much of her knowledge is a mystery to her parents, and can only be explained by her keen observation

and retentive memory, as well as by a power of comprehension much beyond her years. However absorbed she may appear to be in her play, talking vigorously to herself and to imaginary companions all the time, she nevertheless hears everything that is said in her presence, though months will often pass before she alludes to it—whether it be some circumstance that could not later have been referred to so as to revive the impression, or some word that was new to her.

Her imagination is unusually active and from the time she could speak she would coin names for every one she knew, not, as is the case usually with children, because she could not easily pronounce the true name, but from an innate love of nicknames—and perhaps in large part because of a strong feeling of opposition and the desire always to say and do the unexpected. This latter trait causes her often, when she is asked her name, to give a purely fictitious one and maintain it with absolute gravity and firmness. She called her grandfather by the German title "Groszpapa," but soon changed it to "Grosy-wosy," Peter she altered to "Peetsy" and later to "Petens." When asked once the name of her doll, (which by the way had never had a name) she replied on the instant Crocodile-Ghosty and by that cognomen it went ever after. Another she named with equal spontaneity Agnes Coreda.

Such clear thought and perfectly logical mind are unusual in combination with her imaginative powers and her habits of dreaming and pretending. She has a keen sense of humor, loves a joke and usually sees its point, and is a great tease. Referring once to her father, who is exceptionally tall and spare, she remarked, "See my little Papa toddling up hill." Perusal of her vocabulary gives an inadequate idea of her command of language. Her quickness in catching expressions, technical turns, paraphrases, etc., is only equalled by her subsequent comprehending use of them. The proportion of qualifying words in her vocabulary is very large, as is always the case with a precocious child—and all perceptions are wonderfully acute. Her natural discrimination is exemplified in such expressions as "the lapping of the water," "the murmuring of the trees," "unfurling my flag," "satirical laughter," etc. Such adjectives as "grayish-green," "pinkish," "yellowish-brown," etc., are most unusual even in far older children—and she picked up the names of forms, as circle, triangle, square, pentagon and rhomboid, without ever being directly taught them. It was interesting in this connection to see her cleverness in piecing together a picture puzzle. I showed her only once and she immediately grasped the idea and made the picture very nearly perfect, showing both her color and form sense. As a

child, her reasonableness was remarkable. If trying unsuccessfully to fit one thing into another she would always hand it at once to me if I said, "Let me show you," and would watch until she could do it herself. My observation of most children is that they always prefer obstinately to do it in their own way.

She taught herself her letters from street-signs and books and could print them all before she was three, and during the next few months would write letters of several pages of her own composition, having the words of course spelled for her. She has an accurate ear and could sing a tune correctly before her second birthday, and dances in excellent time. She also imitates voices and intonations, and this faculty has undoubtedly been of material influence in enlarging her vocabulary.

She had a German nurse until she was two and a half and understood a good deal of German, using a few words herself and singing a number of German songs. Since then she has materially forgotten this, so I include in her vocabulary such few German words as she still uses in addition to their English equivalents, as they are in no sense a translation but represent for her a distinct concept.

It seemed that in connection with her vocabulary it might be of interest to insert a list of the words used by her at sixteen months. They number 229, a very remarkable number for that age and a clear proof to my mind that the size of her present vocabulary is due less to outward associations and influences than to inherent capacity. It will be found that certain words occur in this earlier list which do not appear in the later vocabulary. In compiling the latter I covered a period of six months, including all words used during that period and ending on her fifth birthday—but I did not include, as do most pedagogues, words previously used but since forgotten. I have also excluded the parts of regular verbs except participial adjectives thinking that with a child of her age it made a fairer estimate not to do so, although J. S. Hall includes them in the vocabulary of his four year child. Of course, this materially lessens the total number of words used.

Her thoughtfulness and the logical quality of her mind may be best illustrated by a few anecdotes. What is most striking in Elizabeth and most unusual in children of her age is her power of correlating her ideas and acquisitions. Every new thought or impression is at once associated with some previous idea. Hence, doubtless, her marvelous memory. For example, in a country walk she noticed a typical Virginia snake fence and wished to call attention to it but knew

no specific name, having never seen one before. After a single moment's hesitation, she said: "You see that M or W fence." Surely nothing could have described its form better.

She is never content until she knows the exact name for every new thing and its every part. She has a great love of Nature, doubtless encouraged by much out-door life, and knows by name a great number of flowers, birds and trees. She asked me at the age of four, "Is heat a spirit? We hear it in the steam-pipes and feel it, but we cannot see it—so I thought it must be a spirit." Her quickness of thought and readiness with an instant and convincing answer were typified one dusty, blustering day when we were out walking. A cloud of dust enveloped us to her great indignation and being a very vehement character she exclaimed, "I should like to kill the dust." In answer to my reproof, "Do not be so foolish, how can any one kill the dust"? she replied, "Very easily, pour a little water on it." That, at the age of four.

An ex-professor of Johns Hopkins, a man of much experience and culture who knew her at the age of two years and nine months, was deeply impressed by her precocity. He considered that her power of apperception, of apprehending one's idea before he had finished expressing it, would prove to be quite phenomenal could it be measured, and ever since her birth she attracted the attention of strangers by her remarkable alertness and intelligence. A series of tests of her intelligence made at the age of five by the Binet-Simon method by a Fellow in Biology at Johns Hopkins and a student in their Psychological laboratory, gives her mentality as that of eleven years. But of even greater interest than this general average is the character of what she could and could not reply to. Such simple questions as naming the day of the week and month, distinguishing coins and their relative value, telling time and similar matters, nearly all a question of teaching or experience and known to the average child of seven or eight, she failed in. But where her observation, her logical quality of mind came into requisition, in such questions as, "Copy design after ten seconds exposure," "Describe certain pictures," "State difference between paper and cloth, butterfly and fly, wood and glass in two minutes," "Tell what we should do in various specified emergencies," "Use three given words in one sentence," "Detect nonsense in certain given statements in limited time," "Define charity, justice, goodness," "Interpret given pictures," "Name the opposite of twenty given words," "Imagine and draw new form produced by joining transposed pieces of diagonally divided rectangular card," her answers were unhesitating. These are

the tests given up to fifteen years—the last being among the mentality tests of an adult—and were all answered correctly by Elizabeth on two different occasions.

A special interest to the student of pedagogy attaches to certain classes of word such as “coined words,” and terms expressive of color, size, shape, and tactual qualities. I shall append a few tables of these together with the two vocabularies. The total vocabulary at five years numbers 6837 words. Of these 56.8% are nouns, 21.8% are adjectives and adverbs, 19.3% verbs—the remaining parts of speech amount to 2.17%. The total number of coined words, including nick-names and deliberate perversions, is 23. She used many others previous to the time when I began to compile her vocabulary, but having included no word that did not occur during the six months previous to her fifth birthday, I of course omit them.

COINED WORDS AND NAMES

Bargie, Bep, Blue-eyes (optician), Crocadila-Ghosty, doodling, Echo-Bridge, Grosy-wosy, laten (to make late), Mamsie, Mimi, neatening (to make neat), Peetsie, Petens, plak (pretend), Popsy, Popsy-wopsy, Ro Bo, smelly, Tapster, Up jar (pitcher), Urachet, Wortens, Wortsey.

VISUAL IMPRESSIONS

A. Color Terms, 117

Amber, auburn, black, blackish, blazing, bloody, blue, bluish, brazen, bright, brighten, brighter, brightest, brightness, brilliant, bronze, brown, cardinal, chocolate, cloudy, coal-black, color, colored, coloring, coral, creamish, crimson, crystal, dark, darker, dim, dingy, dismal, dotted, dull, faded, faint, fiery, flaming, flashing, foggy, gilded, gilt, glaring, gleaming, glimmering, glittering, gloomy, glow, gold, golden, goldish, gorgeous, gorgeously, gray, grayish, grayish-blue, grayishness, gray-tipped, green, greenish, greenish-yellow, hazy, inky, iridescent, ivory, jet, lavender, light, lighter, lightest, lilac, milkish, milky, misty, moonlight, mother-of-pearl, mud-colored, muddy, orange, pale, pearly, pink, plaid, polished, purple, red, reddish, reddish-yellow, rosy, scarlet, shade, shadow, shady, shining, shiny, silver, silvery, smoky, snowy, sooty, spangled, sparkling, speckled, spotted, streaky, striped, sunshiny, tan, twilight, twinkling, violet, white, yellow, yellowish.

B. Form Terms, 73

Acute, alike, arched, bell-shaped, bent, bulge, bumpy, bushy, carved, circle, clump, cone, cornucopia, crescent, crooked, cross, curly, dome, drooping, fat, flat, forked, hexagon, hollow, horn-shaped, humpy, hunk, jagged, level, lofty, long, lump, lumpy, narrow, oblong, parquetry, pentagon, plumed, plump, pointed, polka-dot, prone, pyramid, rectangle, rhomboid, right angle, rolling, round, semi-circle, shallow, shaped, short, shorter, slanting, slender, snaky, square, steep, straight, swelling, tall, taper, thin, thick, three-pronged, towering, triangle, trumpet-shaped, twisted, variety, wide, widest, winding.

C. Tactual Terms, 107

Absorbent, ache, agonizing, agony, blunt, brittle, burning, chapped, chilly, coarse, cold, colder, coldest, cool, cooler, crisp, damp, dripping, dry, elastic, flat, flimsy, fluffy, foamy, fragile, freezing, frothy, frozen, furry, fuzzy, glossy, greasy, hairy, hard, hardened, harder, hardest, harsh, hot, hottest, icy, itchy, knotted, limp, liquid, melting, metal, mushy, oily, polished, powdered, powdery, prickly, red-hot, ragged, rocky, rough, roughest, sandy, scalding, shaggy, sharp, sharper, shrivelled, silky, slick, slippery, slushy, smeary, smooth, snowy, soaking, soapy, soft, solid, sore, steep, steepest, sticky, stiff, stone-cold, stringy, sultry, swelling, sweating, tender, thick, thicker, thickest, thin, thorny, ticklish, tight, tightly, tingle, touch, trembling, warm, watery, wax, wet, wooden, woolen, woolly, wringing-wet, wrinkled.

D. Terms of Taste and Smell, 31

Acid, agreeable, bitter, cheesy, delicious, disgusting, fat, fishy, flavor, good, juicy, nasty, nice, oily, peppery, raw, ripe, salty, smell, smelly, sour, spicy, stale, sugary, sugared, sweet, sweetness, taste, tender, thirsty, tough.

E. Sound Terms, 158

Barking, bawling, blood-curdling, braying, bubbling, buzzing, crackling, calling, chattering, cheering, chirping, chuckling, clapping, clashing, clatter, clinking, clink, coughing, cracking, crackling, creaking, croaking, crushing, cry, din, ding-dong, doodling, dripping, drizzling, dropping, drumming, echo, explode, fiddling, fizzing, fizzling, flapping, flowing, fluttering, foaming, fretting, frothing, frying, gabbling, gargling, gasping, giggling, gnashing, gnawing, grinding, groaning, growling, grumbling, gulping, gurgling, gushing, halloo, hammering, hear, hiccough, hissing, ho, hooting, howling, humming, hurrah, jabbering, jangling, jeering, jingling, clicking, knocking, lapping, laughing, lisping, loud, mewing, moaning, mocking, moo, munching, murmuring, music, muttering, neighing, noisy, ouch, ow, panting, pattering, pop, pound, puffing, purring, quack, quack, rattle, ring, roar, scratching, screaming, screeching, shoo, shouting, shrieking, shrill, sighing, singing, sizzling, slam, snap, sneeze, snore, snort, sob, softly, splash, squeak, squeal, squeeze, stammer, stamping, sucking, talking, tapping, tearing, thumping, thunder, tick-tack, ting-a-ling, tink-a-tink, tinkle, tolling, tone, tooting, tramping, trickling, trotting, trumpeting, tu-whit, tu-whoo, twittering, uttering, voice, wailing, war-hoop, weeping, whew, whimpering, whining, whinny, whispering, whistling, whoa, whooping, whooping-cough, yawning, yelling, yelping.

VOCABULARY AT SIXTEEN MONTHS, 229

(German Words in Italics)

A B C, all gone, all right, along, Amanda, Ba ba black sheep, baby, bag, ball, balloon, basket, bath, *Baum*, bear, beam (sun), bed, bee, *beisst*, bell, big, birdy, *bitte*, blocks, bone, boo, book, boot, bottle, bow-wow, box, boy, *bummel-bammel*, bunny, butter, button, bye-bye, cap, car, carriage, catch, chair, clock, closet, coat, comb, come, cough, cover, cracker, cream, cup, *da*, dance, *danke dir*, dark, day, dear, do, dog, dollie, door, down, drawer, dress, drink, *dunkel*, ear, eat, eye, fall, feather, find, fine, finger, fire, fish, fix it, flag, floor, flower, fly, food, foot, fork, *fort*, Friday, *Frosch*, *Frühstück*, Gee Gee, girl, go, goat, going, good, grease, *Gummischuh*, *gute Nacht*, hair, hand,

Handschuh, hat, head, *heiss*, hell, heep, here, hole, horse, hot, house, how do, hungry, hurrah, in a minute, *ja*, key, kiss, kitty, knife, lady, late, letter, light, little, look, lovely, Mama, man, Mary, me, *Milch*, *merci*, Mimi, mind, mine, *mit*, momo (auto), Monday, money, moo, moon, more, morning, mug, music, Nana, naughty, *nein*, no, nose, oh my, one, orange, Papa, paper, peek a boo, pencil, Pete, *Pferd*, pick-it-up, picture, pie, piece, pig, pigeon, pin, please, poor, powder, pretty, quack, quick, read, reins, ride, ring, room, rose, *ruhig*, *Rührung*, run, Saturday, see, see-saw, shame, shoe, show, *siehst du*, sing, sky, sleepy, smoke, sneeze, snow, so, some, spool, spoon, squirrel, Sunday, sunny, talk, taste, *Taschentuch*, Teco, Tedd, thank you, Thursday, tickle, tick-tack, tinkle, toast, touch, try, tub, Tuesday, two, up, up-a-daisy, walk, water, Wednesday, wind, window, write, yes, you, *Zug*, *Zwieback*.

VOCABULARY AT FIVE YEARS, 6837

A, abacus, Abby, Abby-cat, able, aboard, abominate, abominable, about (adv.), about (prep.), above, abroad, abscess, absence, absent, absolute, absolutely, absorbent-cotton, absurd, absurdly, accept, acceptance, accident, accidentally, accompany, accomplish, accordingly, accuse, aggravate, aggravating, ago, agonizing, agony, agree, agreeable, ah, acid (adj.), acknowledge, acorn, acquainted, acrobat, acrobatic, acrobating (v.), across, act (n.), act (v.), acting, action, active, actor, actress, actual, actually, acute, Ada, Adam's-apple, Adams Statue, add, address (v.), address (n.), adieu, adjoining, admirable, admiral, admire, admit, Adora-Duncan (Isadora), adore, adored (n.), adorn, advertise, advertisement, advice, advise, Aegean Sea, aeronaut, aeroplane, affair, affected, affection, affectionate, affectionately, afford, Afghan, afraid, Africa, African, after (prep.), after (adv.), afternoon, afternoon-tea, Afton, afterwards, again, against, Agamemnon, age, aggravate, aggravating, ago, agonizing, agony, agree, agreeable, ah, aha, ahead, aid (v.), aid (n.), aim (v.), aim (n.), ain't (is not), air, air-cushion, aisle, Aladdin, alarm (v.), alarm (n.), alarming, alas, Alaskan bear, albatross, Alberta, album, alcohol, ale, alert, Alfred, Alice, alike, alive, all (adv.), all (adj.), alligator, allow, almanac, almighty (adj.), almond, almost, aloft, alone, along (adj.), along (prep.), aloud, alphabet, Alps, already, also, altar, alter, although, altogether, Alvin, Theatre, always, am, amaze, amazed, ambassador, amber, amen, America, American, amiable, ambience (ambulance), ambrosia, amoline, among, amount (v.), amount (n.), ample, amputate, amuse, amusement, amusing, an, ancestor, anchor (n.), anchor (v.), ancient, Ancient Mariner, and, Anderson, Andrew, anecdote, angel, angelic, anger, angle, Angora cat, angry, anguish, animal, ankle, Anna, Anheuser Busch, Annisquam, annis seed, announce, annoy, annoying, another, answer (n.), answer (v.), ant, ante-pasta, antique, antlers, anxiety, anxious, any, anyhow, any-where, apart, apartment, ape, aphid, apiece, apologize, apostrophe, apparently, appear, appearance, appetite, applause, apple, apple-blossoms, apple-tree, apply, Apollinaris, appreciate, approach (v.), approach (n.), appropriate, approve, apricot, April, apron, apt, arbutus, arch, arched, archers, architect, are, aren't, argue, arise, arm, arm-chair, arm-hole, armor, arms (weapons), army, army nurse, arose, around, arrange, arrangement, arrest, arrive, arrival, arrow, art, Arthur, artichoke, article, artificial, artillery, artist, as, as-as (adv.), ascended, ashes, ashamed, ash-man, ashore, Asia, ask, asleep, asparagus, aspect, ass, assist, assistant, associate, assure, assuredly, aster, astonished, astonishing, astonishment, asylum, at, ate, Athelstane, Atlantic City, Atlantic Ocean, Atlas, atrocious, attached, attack, attempt (v.), at-

tempt (n.), attend, attendant, attention, attic, attitude, attractive, auburn, audience, *auf Wiedersehen*, August, Augusta, aunt, Aunt Glegg, auntie, au revoir, Australia, author, automobile, autumn, avenge, avenue, avoid, awake, away (adv.), away (interj.), awful, awfully, a-while, awkward, awning, axe, awe, azalea.

Baa, babe, baboon, baby, baby-dress, babyishly, Bacchus, bachelor, back (n.), back (v.), back (adv.), backgammon, background, backstairs, backwards, bacon, bad (naughty), bad (rotten), bade, badge, badger, bad-tempered, bag, baggage, bah, bake, baker, bakery, balance (v.), balance (n.), balcony, bald, bald-headed, ball (party), ball (toy), balloon, ball-room, balsam, Baltimore, bambino, bamboozle, band (group), band (ribbon), band (music), bandage, bandaged, bandanna, bannister, bang, bangs, bank (building), bank (hillside), bank-book, banner, banquet, baptize, bar (n.), bar (v.), barbarous, barber, barbered, bare, bareback, barefooted, barely, barette, bargain, Bargie (name), bark (v.), bark (n.), barley, barn, barnyard, barrel, barricade, base, baseball, basement, bashful, Basic (city), basin, basket, Bass Rocks, baste, bat (bird), bat (club), bath, bathing, bathrobe, bathroom, bathtub, Batten, batter (v.), batter (n.), batter-bread, battle, battle-ax, battlefield, battlements, Baucis, bawl, bawling, bay (water), bay window, be, beach (shore), beech (tree), beacon-light, Beacon Street, bead, beaded, beak, beaker, Beale, beam, bean, beanbag, beanpod, beanstalk, bear (n.), bear (v.), beard, beast, beastly, beat, beating, beautiful, beauty, beauty-sleep, beaver, Beazley, because, became, beckon, become, becoming, bed, bedded, bedroom, bedroom-slippers, bedspread, bee, beef, beef-steak, been, beer, beets, beetle, before (adv.), before (prep.), beforehand, beg, began, beggar, begin, beginning, begun, behave, behavior, behind, being (v.), being (n.), believe, bell, bell-boy, Belle, bell-flower, bell-man, bellow, bell-shaped, belly, belong, belongings, beloved (n.), beloved (adj.), below, belt, bench, bend, bending, beneath, bent (v.), bent (adj.), Bep, Beppo, Berlin, berry, berth, beside (adv.), beside (prep.), besides, best, bet, Bethlehem, better, Betsy, Betty, beware, between, bewitched, beyond, Bezique, bib, bib and tucker, bid, big, bigger, biggest, bill (bird), bill (money), Bill (name), billows, billy, Billy, bind, biology, biplane, birch tree, bird, bird cage, birthday, biscuit, bishop, bishop (chess), bit (n.), bit (v.), bite (n.), bite (v.), bitter, bitterly, black (adj.), black (v.), Blacks, blackberry, blackbird, blackboard, black-eyed, black-eyed Susans, blackish, blacksmith, blade, Blanche, blank, blank-book, blanket, blast, blaze (n.), blaze (v.), blazing, bleed, bleeding, blessed, Blimber, blind (adj.), blind (v.), blindfold, blinding, blink, blister, block (n.), block (v.), blockhead, blood, blood-curdling, blood-root, blood-stain, bloody, bloom, blossom (n.), blossom (v.), blot, (n.), blot (v.), blotter, blow, blow-pipe, blue, Bluebeard, blueberry, bluebird, blue-eyed, Blue eyes (optician), bluish, blunt, blush, boa, boar, board (n.), board (v.), boarders, boarding school, boaster, boat, bobbing, Bob Jakins, Bob White, Bodeker, bodkin, body, bogey, Bo-peep, boil, boiled, boilers, bold, boldest, boldly, bolster, bolt (n.), bolt (v.), bolted, bone (n.), bone (adj.), bonfire, bonnet, bonny, bonny-clabber, booblijock (turkey), Boojum, boo-hoo, book, bookcase, bookmark, bookstore, boots, booty, borax, border, bore (carry), bore (tire), born, Borneo, borrow, borrowed, bosh, bosom, boss (n.), boss (v.), Boston, Boston store, both, bother (n.), bother (v.), bottle, bottom, bough, bought, bounce, bouncing Betty, bound (tied), bound (determined), bounding, bouquet, bow (v.), bow (ship), bow (courtesy), bow (arrow), bow (ribbon), bow-knot, bowl, bowling-alley, box (n.), box (v.), boy, boyish, boy's (adj.), Boy Scouts, Boylston Street, bracelet, bracket, braid (n.), braid (v.), braided, brain, brake, bran, branch, brand-new, brat, brave, bravely.

braver, bravest, bravery, bray, brazen, Brazil, Brazilian, bread, break, breakers, breakfast, breast, breastbone, breastpin, breath, breathe, bred, breeze, breezy, briars, bricks, brick (adj.), bridal veil, bride, bridegroom, bridesmaids, bride's veil, bridge, Bridge (card game), bridle, bright, brighten, brighter, brightest, brightness, Brighton, brilliant, bring, brink, bristles, Bristol-board, British, brittle, broad, broader, broadest, Broad Street, broil, broke, broken, broken-down, bronze, brook, broom, broth, brother, brother-in-law, brought, brow, brown, Brown, Brown-Betty, brown-bread, brown-haired, Bruin, bruise (n.), bruise (v.), bruised, brush (n.), brush (v.), brutal, brute, Bryn Mawr, bubble, bubbling, bucket, buckle (n.), buckle (v.), buckskin (adj.), buckskins, bud (n.), bud (v.), budge, budding, buffalo, buffer, bug, buggy, bugle, build, builder, building, built, bulge, bull, bulldog, bully, bum, bumblebee, bump, bumped, bumpy, bunch, bunched, bundle, bungalow, bunny, bureau, burglar, burn (n.), burn (v.), burning, burnt, burst, bury, burying-ground, bush, bushel, bushy, business, bust, busy (adj.), busy (v.), but, butcher, butler, butter (n.), butter (v.), but-tercup, buttered, butterfly, butterfly-net, button (n.), button (v.), buttonhole, buttonhook, buy, buzz, buzzard, buzzing, by, bye-bye.

Cab, cabbage, cabin, cocoa, cackle, café, cage (n.), cage (v.), caged, Cairo, cake, calendar, calico, California, calisthenics, calf, call (n.), call (v.), callers, calm, calomel (calomel), cambric, came, camel, camera, camp, camping, camphor, camp-stool, can (n.), can (v.), Canada, Canadian, canary, candelabra, candied, candies, candle, candlestick, cane, cannibal, cannon, cannon-ball, cannot, canoe, cantaloupe, cantilever (bridge), canvas, cap, capable, cape, capital, capitol, capoteiti, captain, capture, car, caramel, carbon-paper, carcass, card, card-case, cardinal (bird), cardinal (color), card-party, care (n.), care (v.), careful, carefully, careless, Carmichael, carnation, Carolina wren, Caroline, carousel, Carnegie Museum, carpenter, carpet, Carr, Carrabbas, carriage, carrot, carry, cart, carved, carve, carving knife, case (box), case (in), cast, castle, castle (chess), cat, catalogue, catch (n.), catch (v.), catching, caterpillar, cathedral, Catholic, Catherine, cattle, Cat-of-the crags, caught, cauliflower, cause, cautious, cautiously, cavalry, cavalier, care, caw, cease, cedar, ceiling, celebrate, celebration, celery, cell, cellar, celluloid, cemetery, censer, cent, centipede, centre, cereal, ceremony, certain, certainly, chafing-dish, chain, chained, chair, chalet, chalk, challenge (n.), challenge (v.), chamber, chambermaid, champagne, chance, chancing, chandelier, change (n.), change (v.), Chanticleer, chap, chapel, Chapman, chapter, chapped, chariot, Charley, Charlotte, charlotte russe, charming, charred, chase (n.), chase (v.), chasm, chatter (n.), chatter (v.), chatter-box, chattering, chauffeur, cheap, check, check-book, checked, checkers, checkmate, check-rein, cheek, cheer (n.), cheer (v.), cheerful, cheese, cheesy, chemical, chemist, chemistry, cheque, cherry, Chesney, chess, chessmen, chest (box), chest (anatomy), chestnut, Chevy-Chase, chew, chewing-gum, Chicago, Chichester, chicken, Chicken-Little, chief (n.), chief (adj.), chiefly, chieftain, chiffon, child, children, childhood, childish, chilly, Chimera, chimney, chin, china (n.), china (adj.), China, chinese, Chingatchagook, chipping, chip, chipmunk, chips (poker), chirp, chirping, chocolate, chocolates, choking, choo-choo (train), choose, chop (n.), chop (v.), chorus, chose, Christ, Christ-child, Christine, Christmas, Christmas-tree, chuckle (n.), chuckle (v.), chum, church, Church Hill, churchyard, churn, cigar, cigarette, Cincinnati, cinder, Cinderella, circle, circulation, circumstance, circus, city, Civil war, clad, clam, clamber, clamoring, clap, clapping, Clara, Clarence, Clarke, clash (v.), clash (n.), clashing, clasp, class, clatter, clattering, claw (n.), claw (v.), clay, clean (v.), clean (adj.), clear (v.), clear (adj.), Clementine,

clergyman, clerk. Cleveland Park, clever, cleverly, click, climb (n.), climb (v.), climbing, cling, clink (n.), clink (v.), clip, clips, cloak, clock, close (adj.), close (v.), closed, closet, cloth, clothes, clothes-basket, clothes-brush, clothes-horse, clothes-line, clothes-pin, clouds, cloudy, clover, clown, club (stick), club (gathering), clump, clumsy, clung, clutch, clutches, coach, coachman, coal, coal-black, coarse, coast (n.), coast (v.), coat, coated, cobbler, cobble-stone, cobweb, cock, cocking, cock-a-doodle-doo, cockatoo, cock-robin, cock-tail, cocoa, cocoanut, codfish, codfish balls, codly-deliver (cod-liver-oil), coffee, coffee-pot, coffin, Cohen, coil, coiling, cold (n.), cold (adj.), cold-cream, colder, coldest, collapse, collar, collect, collection, college, collision, cologne, colonel, color, colored, coloring, colossal, Columbia, columbine, column, comb (n.), comb (v.), combination, come, comet, comfort (n.), comfort (v.), comfortable, comfortabler, comic, comical, command (n.), command (v.), commence, comment, Commodore, common (n.), common (v.), commotion, companion, company, compass, compelled, complain, complete, completely, complexion, complicated, compliment, comrade, conceive, conceivable, concert, conclusion, condensed-cream, condition, conduct, conducted, conductor, cone, confetti, confusion, congratulate, congratulations, conjurer, connect, connected, Connecticut Avenue, conquer, conqueror, consent (n.), consent (v.), consequence, consider, considerate, considerably, consists, console, constant, Constantinople, constantly, construct, consult, contain, content, contented, continue, contradict, contrary, control, convenient, conversation, converse, convince, cook (n.), cook (v.), cooked, cooky, cool (v.), cool (adj.), cooler, coop, copy (n.), copy (v.), copy-book. Cora, coral, cord, core, cork (n.), cork (v.), corkscrew, corn, cornbread, Cornelia, corner, corn-flakes, corn meal, cornucopia, corps (army), correct (v.), correct (adj.), correctly, correspondingly, corsets, cosey, cost, costume, cot, cottage, cotton, couch, cough (n.), cough (v.), could, couldn't, count, counter, counterpane, country (birth-place), country (not city), countryman, country-wagon, county, couple, courageous, course, course-dinner, court, courtesy, court-house, courtiers, cousin, cover (n.), cover (v.), covers (bed), covering, cow, coward, cowboy, cowcatcher, cozy, crab, crack (n.), crack (v.), cracked, cracker, cracker-jack, crackle, cradle, Craigie, cramming, cranberry, crane, crank (handle), crank (person), cranky, cravat, crawl, crawling, cray-fish, crayon, crazy, creak, creaky, cream, cream-cheese, creamish, cream-of-wheat, creature, creek, creep, creep-mouse, crepe, crescent, cress, crib, cribbage, cribbage-board, cried, crime, crimson, crisp, croaking, crocodile, Crocadila-ghosty, crook, crooked, croquet, croquette, cross (n.), cross (v.), cross (adj.), cross-bow, cross-patch, crow (n.), crow (v.), crowd (n.), crowd (v.), crowding, crown, cruel, cruelty, cruise, crumb, crumble, crumbly, crumple, crunch, crusader, crush, crushed, crushing, crust, crutch, cry (n.), cry (v.), cry-baby, crying, crystal, cub, cubby-hole, cuckoo, cucumber, cuddle, cuff, Cuffy, cunning, cunningest, cup, cupboard, cupful, Cupid, curb, curds, cure, curiosity, curious, curl, curls, curling-iron, curly, curtain, curtsey, cushion, custard, custom, customer, cut (n.), cut (v.), cute, cutest.

Dab, dabble, Dachshund, Dacotahs, daddy, Daffy-down dilly, dagger, Daggy, daily, daintiness, dainty, dairy, daisy, damage (n.), damage (v.), dame, damn, damp, damper, dance (n.), dance (v.), dancer, dancing-school, dandelion, dandruff, dandy, danger, dangerous, dangle, dangling, *danke dir*, dare, dark, darker, darling (n.), darling (adj.), darn, (be)darned, dash (n.), dash (v.), dashing, date, daughter, daughter-in-law, dawdle, dawn, day, day-break, day-light, day-time, dazzle, Deacon, dead, deadly, deadly nightshade, deaf, deafen, deal

(v.), deal (adj.), Deane, dear, dearly, dearest (n.), dearest (adj.), death cup (mushroom), Deaton, De Bracy, decayed, decent, December, decide, decidedly, deck, declare, decline, decorate, decoration, decorative, deed, deep, deeper, deer, Deerslayer, defend, definition, deliberate, deliberately, delicate, delicious, delight, delighted, delightful, deliver, demand, demon, den, dent, dented, dentist, deny, depart, department, departure, depend, deposit, depot, depths, derrick, descend, describe, desert (n.), desert (v.), deserve, design, desire (n.), desire (v.), desk; desolate, despair, despatch, desperate, despise, dessert, destroy, detach, determined, detest, detestable, devil, devoted (v.), devoted (adj.), devour, dew, diabolical, diamond, diaper, dice, Dickens, Dicky, dictionary, did, didn't, die, dying, diet, dieting, difference, different, differently, difficult, difficulty, dig, digest, digestion, dignified, diligent, Dillon, dim, dimity, dimple, din, Dinah, dine, ding-dong, dingy, dining-car, dining-room, dinner, dinner-dress, dip, dipper, direct, direction, directly, dirigible, dirt, dirtiness, dirty (v.), dirty (adj.), disagree, disagreeable, disappear, disapprove, disappoint, disappointment, disapprove, discard (v.), discard (cards) (n.), discourage, discover, discovery, discuss, discussion, disease, disgrace (n.), disgrace (v.), disgraceful, disguise, disgust, disgusting, disgustingly, dish, dishful, dishonest, dislike, dismal, dismiss, disobedient, disobey, disobliging, disorder, disorderly, dispatch, displeased, dispose, disposition, disreputable, disrespect, dissatisfied, dissolve, distance, distinctly, distinguish, distinguished, distress (n.), distress (v.), distressed, disturb, ditch, dive, diver, divide, Dixie, dizzy, do (v.), do (musical note), Dobbin, doctor, dodge, dog, dogwood, doily, doing, doll, dollar, doll's-house, dolphin, dome, domino, done, donkey, don't, "doodling," door, doormat, doorway, Dorchester Bay, dormouse, Dorothy, dose, dot (n.), dot (v.), doth, dotted, double (v.), double (adj.), doublet (pair), doublet (waistcoat), doubt, doubts, dough, doughnut, dove, down (adj.), down (prep.), down-fall, down-hill, down-stairs, down-town, downward, doze, dozing, dozen, drag, dragon, dragon fly, drain (n.), drain (v.), dram, drank, drape, drapery, Draughbaugh, draught, draw, drawer, drawers, drawing, drawl, dreadful, dreadfully, dream, dreamed, dreary, dregs, drenched, dress (n.), dress (v.), dressing, dressing-gown, dressing-sack, dressing-table, dressmaker, drifting, drink (n.), drink (v.), *drunken*, drinking-cup, drip, dripping, drive (n.), drive (v.), driver, drizzling, droop, drooping, drop (n.), drop (v.), dropper, drove, drown, drowned, drowsy, drug, druggist, drug-store, drum (n.), drum (v.), drummer, Drummond, drum-stick, drunk, dry (v.), dry (adj.), duck, Duck-luck, Ducky-daddles, Dudley, dug, dull, dumb, dumb-waiter, dummy, dump, dumpling, Duncan, dunce, dungeon, Dunk, Dupont Circle, Durbar, dust, dust-brush, dust-cloth, dust-pan, dusty, Dutch, Dutch-cleanser, Dutchman, dutch-neck, duty, dwarf, dye (n.), dye (v.), dying.

Each, eager, eagerly, eagle, ear, ear-ache, early, earn, earnest, ear-ring, earth, ease, easily, East, Easter, Easter-egg, Easter-hare, easy, eat, echo (n.), echo (v.), Echo Bridge, Edelweiss, edge, edging, eel, effect, effort, egg, egg-plant, egg-shell, Egypt, Egyptian, eider-down, eight, eighteen, eighty, either (adj.), either (pron.), elaborate, elastic, Elba Station, elbow (n.), elbow (v.), electric, electric chair, electric fan, electricity, electrocution, elegant, elephant, elevator, eleven, Elfrida, Elizabeth, Elkton, Elk-run, Ellison, elm-tree, elm-tablets, else (adj.), else (pron.), Elsie, embarrass, embarrassed, embassy, embedded, embrace, embroider, embroidered, embroidery, Emelia, Emma, emory-board, empty (v.), empty (adj.), enamel, enchant, enchanted, enchantress, enclose, encourage, encyclopedia, end (n.), end (v.), endeavor, endure, enemy, engine, engineer, England, English, English-

man, enjoy, enormous, enough, enquire, enrage, enraged, enter, entertain, entertaining, entertainment, entire, entirely, entrance, entreat, entry, envelope, epaulettes, equal, ere, erect (v.), erect (adj.), errand, error, escape (n.), escape (v.), escort, Eskimo, especial, especially, eternal, eternally, Ethel, Europe, Evangeline, Evans, evaporated, Eve, even (adj.), even (adv.), even (v.), evening, evening-dress, evening-star, evenly, ever, evergreens, ever-more, every, every-day, everything, everywhere, evil, exact, exactly, examine, example, exceedingly, excellent, excellently, except, excessively, exchange, excited, exciting, excitement, exclaim, excursion, excursion-boat, excuse (n.), excuse (v.), exercise (n.), exercise (v.), exhaust, exhausted, exhibit, exist, existence, expect, expedition, expensive, experience, expert, explain, exploded, explore, express, expression, expressly, exquisite, extension, extensive, extent, extra, extraordinary, extremely, exulting, eye, eyeball, eyebrow, eye-dropper, eyeglasses, eyelash, eyelid, eyesight, eye-socket.

Face, faced, facing, fact, factory, fade, faded, fagot, fail, faint (n.), faint (v.), faint (adj.), faintly, fair (adj.), fair (n.), fairly, fairy (n.), fairy-story, fairy-tale, faithful, faithfully, fakir, fall (n.), fall (v.), Fall River boat, false, family, famous, fan (n.), fan (v.), fancy, fancy-dance, Fanny, fantastic, far (adj.), far (adv.), farce, farewell, farm, farmer, farmhouse, farmyard, farther, farthest, fascinating, fashion, fashionable, fast (adj.), fast (adv.), fasten, fat (n.), fat (adj.), fatal, fate, father, father-in-law, fatiguing, fault, favorite, fawn, fear (n.), fear (v.), fearful, feast, feasting, feat, feather, features, February, fed, feeble, feebly, feed, feel, feelers, feelings, feet, "feeze," fell, fellow, felt (n.), felt (adj.), felt (v.), fence, fenced, fern, ferocious, ferociously, ferry, ferry-boat, festival, festive, fetch, fever, few, fib, fibbing, fiddle (n.), fiddle (v.), fiddle-faddle, field, fierce, fiercely, fiery, fiery-eyed, fifteen, fifteenth, fifth, fifty, fig, fight (n.), fight (v.), fig-leaf, figure, figurehead, file (n.), file (v.), fill, fillet, film, filthy, find, fine, finely, finger, finger-bowl, finger-nail, finish, fire (n.), fire (v.), firecracker, fire-engine, firefly, fire-horses, fireman, fireplace, fireworks, firm, firmly, first (adj.), first (adv.), fish (n.), fish (v.), fisherman, fishhook, fishing-line, fishy, fist, fit (n.), fit (v.), fit (adj.), five, fix, fizz (n.), fizz (v.), fizzle (n.), fizzle (v.), flag, flagon, flake, flame (n.), flame (v.), flaming, flamingo, flannel, flap, flapping, flash, (n.), flash (v.), flashing, flat (n.), flat (adj.), flavor, flax, flaxseed tea, flea, fled, flee, fleece, flesh, flew, flight, flimsy, fling, flipper, flit, flitting, float (n.), float (v.), floating, flock, flood, flooded, floor, flop, Flora, Florence, Florence Court, Florence Nightingale, Florida, Floss, Flossie, flounder, flour, flourish, flow, flower, flower-girl, flower-pot, flowing, fluffy, flung, flutter (n.), flutter (v.), fluttering, fly (n.), fly (v.), flying, flying-machine, fly-swatter, foam (n.), foam (v.), foaming, foamy, foe, fog, foggy, fold, folks, follow, fond, food, fool, fooled, foolish, foolishness, foolscap, foot, football, footman, footprint, footstep, footstool, for, forbid, force (n.), force (v.), ford, foreground, forehead, foreign, forest, forever, forget, forget-me-not, forgive, fork, forked, forlorn, forsake, forsythia, fort, forth, fortieth, fortunate, forty, forward, fought, found, foundation, fountain, four, four-leafed, fourteen, fourth, fox, fox-terrier, fragile, frail, fragments, frame (n.), frame (v.), Frank, Franklin, frantic, fraud, Frayser, freckle, free (v.), free (adj.), Freeda, freedom, Freestone-water, freeze, freezer, freezing, freight, freight-car, French, French-dressing, Frenchman, fresh, fretful, fretting, Friar Tuck, Friday, fried, friend, friendly, fright, frighten, frightened, frightful, fringe, frisking, frisky, fro, frock, frock-coat, frog, frolic, from, front, frost, froth, frothy, frown (n.), frown (v.), frowningly, frozen, fruit, fruit-

tree, fry, fuge (huge), full, Fulton, fumble, fun, funeral, funny, furious, furl, furnace, furnish, furniture, furry, further, fury, fuss (n.), fuss (v.), fussy, fuzzy.

Gabble, Gaffer, gaily, gain, gale, gallant, gallery, gallop, gallows-meat, game, Gammer, gap, garage, garbage, garden, gardener, gargle, garment, garniture, garret, garters, gas, gas-fixture, gas-light, gash, gasoline, gasping, gate, gate-way, gather, gathering, gave, gay, gaze, Gee Gee, geese, gee-whiz, gems, general, general (officer), generally, generous, genial, genii, genius, gentle, gentleman, gently, geography, George Eliot, Georgetown, geranium, germs, German (n.), German (adj.), Germany, Gertrude, *Gesundheit*, get, giant, gibberish, gible, giddy, gift, gigantic, giggling, gilded, gills, gilt, ginger, ginger-ale, ging-ham, giraffe, girl, give, gizzard, glad, gladly, glance (n.), glance (v.), glare, glaring, glass (n.), Glass (name), glass (adj.), glass-cases, glassful, gleam, gleaming, glide, glimmer, glimmering, glimpse, glistens, glistening, glitter, glittering, gloaming, globe, gloomy, glorious, glory, glossy, Gloucester, gloves, glow, glue (n.), glue (v.), glycerine, Glycoph-moline, gnash, gnashing, gnawing, go, goat, gobble, goblet, go-cart, God, godchild, goddess, godmother, going, gold (n.), gold (adj.), golden, Golden-fleece, goldenrod, goldfish, Goldilocks, goldfish, gone, gong, good, good-bye, "gooder," good-humored, goodies, good-natured, goodness, good-night, Goodwin, goose, "goose-cap," Goose-Loose, Gordon, gorgeous, gorgeously, gorgeousness, Gorgons, got, gouged, gown, grab, graceful, gracefully, Grace Street, gracious, grain, grand, grandchild, grandest, grandfather, grandly, grandmother, Grand Prè, grandson, grand-vizier, granite (n.), granite (adj.), grant, grape, grape-fruit, graphophone, grasp, grass, grasshopper, grassy, grate, grateful, grating, grave (n.), grave (adj.), gravestone, graveyard, gravy, gray, grayish, grayish-blue, grayishness, gray-tipped, grazing, grease (n.), grease (v.), greasy, great, Great Falls, great-grandmother, Greece, greedy, Greek, Greeks, green, green-house, greenish, greenish-yellow, Gretel, grew, griddle-cake, Gridley, grieving, Griffin, Grimm, grin, grinning, grind, grizzly bear, groan, groaning, grocer, grocery, groom, *Grossmama*, *Grosspapa*, grotesque, grotesquely, ground (n.), ground (v.), ground-hog, grounds, grove, grovelling, grow, growl, grown ups, growth, gruel, grumble, grumbling, guard (n.), guard (v.), guess, guest, guest-room, guide (n.), guide (v.), guimpe, guinea-hen, guinea-pig, gull, gulp, gulping, gums, gun, gurgle, gurgling, gushing, gutter, guy, gypsy.

Hack, had, hair, hair-pin, hair-ribbon, hair-tonic, hairy, half, hall, halloo (v.), halloo! Hallow E'en, ham, Hamburg grapes, hammer (n.), hammer (v.), hammock, Hampden, hand (n.), hand (v.), hand-cuffed, handful, handicap, handkerchief, handle (n.), handle (v.), handsome, handsomer, handsomest, hang, hanger, hanging, hangnail, Hans, Hansel, happen, happily, happiness, happy, Happy Hooligan, Happy-hunting-grounds, harbor, hard, hardened, harder, hardest, hard-hearted, hardly, hark, harm, harmless, harmonica, harness, Harold, harp, harpy, Harrisonburg, harsh, has, hash, hassock, haste, hasten, hasty, hat, hat-box, hat-brush, hatch, hatchet, hate, hateful, hatpin, haughty, haul, have, hawk, Hawthorne, hay, hay-stack, Hayward, hazy, he, head, head-ache, head-foremost, head-rest, head-stone, head-waiter, heal, healthy, Healy, heap (n.), heap (v.), heaping, hear, heard, heart, heart-broken, hearth, hearty, heat (n.), heat (v.), heater, heaven, heaving, heavy, heavy-hearted, hedge, heed, heedless, heel, "Helby," held, Helen, helmet, help (n.), help (v.), helper, helpful, helpless, hem, hen, hen-coop, Henny-penny, her, herald, Herbert Spencer, herd, herdic, Hermann Schmidt, *hermit*, hero, herring, hers, herself, Hesperides, Hester, hexagon, Hiawatha, hiccoughs, hiccoughing, hid, hide,

hideous, hiding-place, high, high-ball, high-school, "hike," hill, hill-side, hilt, him, himself, hip, hippopotamus, his, hiss (v.), hiss, hissing, hit, hitch, hither, hive, ho, hoarhound, hoarse, hobble, hobble-skirt, hobby-horse, hoe (n.), hoe (v.), hog, hold, hole, holiday, Holland, Hollander, hollow (v.), hollow (adj.), holly, holly-berry, holly-hock, Holy Land, home, honorable, honest, honestly, honey, honeycomb, honeymoon, honeysuckle, honor, hood, hoof, hook (n.), hook (v.), hook and ladder, hoop, hooping-cough, hoot (n.), hoot (v.), Hooty, hop (n.), hop (v.), hope, Hopkins, hopping, Horace, horizon, horns, horn-shaped, horrible, horribly, horrid, horrified, horrify, horror, horse, horse-back, horse-fly, horse-mint, horse-shoe, hose (n.), hose (v.), hospitable, hospital, host, hostess, hot, hotel, "hot-Scotch," hottest, hour, house, houseboat, household, housekeeper, housemaid, housewife, hover, how, how d'you do, however, howl (n.), howl (v.), howling, huckleberry, huddled, hug (n.), hug (v.), Hugo, hum, human being, human nature, humbug, humming, humming-bird, humorous, hump, Humphrey Ward, humpy, hundred, hunger, hungry, hunk, hunt, hunter, hurdy-gurdy, hurl, hurrah, hurricane, hurry (n.), hurry (v.), hurrying, hurt, husband, hush, husks, hustle, hut, hyacinth, hydra, hydrant, hymn, hypnotize.

I, lagoo, ibex, ice, ice-bag, ice-berg, ice-chest, ice-cream, ice-cream cone, ice-house, ice-man, icing, icy, idea, identical, idiot, idiotic, idle, idleness, idol, if, ill, ill-mannered, ill-natured, image, imagine, imagination, imitate, imitation (n.), imitation (adj.), immediately, immense, immensely, impatient, impatiently, impertinent, impolite, important, impossible, improper, improperly, improve, improvement, impudence, impudent, impulse, in, in vain, incessantly, incessively (excessively), inch, inconsiderate, inconvenient, incorrect, incredible, incredibly, indeed, independence, index, India, Indian (n.), Indian (adj.), Indian meal, indigestible, indigestion, indignant, indistinct, induce, inducement, industrious, infant, infantry, initials, inflamed, inform, injure, injured, injury, ink, ink-stand, inky, inn, inner, innocent, inquire, insect, inside, insist, insistent, insolent, inspector, instance, instant, instantly, instead, instep, institution, instrument, insufferable, insult (v.), insult (n.), intelligent, intend, intently, interest (v.), interest (n.), interesting, interfere, interfering, interrupt, interruption, intimate, into, intolerable, introduce, invent, invisible, invitation, invite, Ireland, Irish, Irish-potato, iron (metal), iron (flatiron), iron (adj.), iron (v.), iron (n.), ironing, iron-water, iridescent, irritable, irritate, is, Isaac of York, Isegrim, Ishkooda, island, issue, it, Italian (n.), Italian (adj.), Italy, itch, itching, itchy, itself, Ivanhoe, ivory, ivy.

Jabber, jabbering, Jabberwock, jabot, jacket, Jack-Frost, Jack-in-the-pulpit, Jackson, jack-stones, jack-straws, Jacob, jagged, jail (n.), jail (v.), jam (n.), jam (v.), James, Jamestown, Jane, jangling, janitor, January, Japan, Japanese (n.), Japanese (adj.), jar (v.), jar (n.—jolt), jar (n.—pot), Jarley, jaw, jaw-bone, jealous, Jean, Jedediah, jeer, jeers, jeering, Jeff, jelly, Jennings Gap, jerk (n.), jerk (v.), jerkin, Jerusalem, Jesus, jet, jewel, jewelry, Jew, Jewess, Jew's-harp, jiffy, jig, "jiggle," Jim Bloodsoe, Jimmy, jingle (v.), jingle (n.), jingling, Jingo, job, jog, Johnny, John Peel, join, joint, joke, joking, joker, joker (cards), jolly, jolt (v.), jolt (n.), Jones, jonquil, journey, joy, joyful, Juanita, Judas-tree, judge, jug, juggling, juice, juicy, Julia Marlowe, July, jump (n.), jump (v.), jumping Jack, June, jungle, junket, just, juvenile.

Kalb, kale, kaleidoscope, kangaroo, Kann, Karl, Katzen-jammer-Kids, keep, keeper, Kentucky, kept, kerchief, kernel, kettle, key, key-hole, kick (n.), kick (v.), kicking, kid (boy), kid (adj.), kidney, kill, kiln, kind, kindergarten, kindest, kind-hearted, kindness, king, kingdom,

king-fisher, kiss (n.), kiss (v.), Kissengen, kitchen, kitchen-maid, kite, kitten, kitty, klick (n.), klick (v.), Klondike, knap-sack, knave, knead, knee, knee-deep, kneel, kneeling, knelt, knew, knickerbockers, knick-nacks, knife (n.), knife (v.), knight, knit, knitting, knitting needles, knob, knock (n.), knock (v.), knocking, Knopf, knot (n.), knot (v.), knotted, know, knuckle, kodak, Kuhblank.

La! label, labor, laboratory, labyrinth, lace (n.), lace -(v.), lacing, lacking, ladder, laddy, ladies' chain, ladies' chair, ladle, lady, lady-bug, lady-finger, lady like, lady-love, laid, Lafayette Square, lake, lamb, lane, lament, lamp, lamp-oil, lance, lancers, land, landed, landing, landing-place, landlady, landlord, landscape, lane, language, lantern, lap, lapping, large, largely, larger, largest, lark, lash, lassie, last (adj.), last (adv.), last (v.), Latane, latch, latch-key, late, lately, "laten," later, latest, lather, Latin, laugh (n.), laugh (v.), laughing, laughable, laughter, launch, laundress, laundry, lavender, law, lawn (n., grass), lawn (adj., cotton material), lay, laziness, lazy, lead (v.), lead (n.), leader, lead-pencil, leaf, leak (n.), leak (v.), leaky, lean (n.), lean (v.), leaning, leap (n.), leap (v.), leaping, learn, learning, least, least-ways, leather, Leather-stocking, leave (n.), leave (v.), leavings, lecture (n.), lecture (v.), led, ledge (n.), ledge (v.), Le Duc, Lee, left (adj.), left (v.), left-handed, leg, legation, leggings, lemon, lemonade, Lempie, lend, length, lent, Leo, leopard, less, lesson, lest, let, letter (A. B. C.), letter (epistle), letter-paper, letter-man, letter-box, lettuce, level, liable, liberty, librarian, library, lick (n.), lick (v.), lid, lie, lief, life, lifeboat, lifeless, life-preserver, lift (n.), lift (v.), light (n.), light (v.), light (adj.), lighter, lightest, lighthouse, lightly, lightning, lightning-bug, like (v.), like (n.), like (adj.), likely, likeness, likewise, liking, lilac (flower), lilac (color), Liliputians, lily, limb, limit, limp, limping, Lincoln, line, linen, linger, lining, link (n.), link (v.), lion, lioness, lip, Lippincott, liquid, lisp, lisp, list, listen, lit (v.), litter, little, littler, live (v.), live (adj.), liveliest, livelong, lively, liver, living, lizard, Lizzie, load (n.), load (v.), loaf, loathe, lobby, lobster, lock (n., door), lock (n., hair), lock (v.), locket, lockjaw, locust, lodging, loft, lofty, log, Lombardy Street, London, lonely, lonesome, long (adj.), long (v.), Longfellow, longing, look (n.), look (v.), looking-glass, loom, loop, loose (adj.), loose (v.), loosely, loosen, Lord, Lorelei, lose, lost, lot (open ground), lot (quantity), lotion, lots, loud, louder, loudest, loudly, Louis, lounge, love (n.), love (v.), lovelier, lovely, lover, loving, lovingly, low, Lowe, lower (adj.), lower (v.), lowest, low-necked, lozenge, luck, luckily, lucky, Lucy, ludicrous, luggage, lugging, lullaby, lump, lumpy, lunch (n.), lunch (v.), lungs, Luray, lusty, lynx.

Ma'am, Mable, macaroni, macaroon, Macbeth, machine, machinery, mackerel, mad, mad-cap, made, Mademoiselle, madly, magazine, Maggie, magic, magical, magician, magnesia, magnet, magnificent, magnify, magnolia, Magruder, mahogany, maid, maiden, mail (n.), mail (v.), mailman, main, Main Street, Major Butt, make, mallet, malted-milk, Mama, "Mamsie," man, manage, manager, mane, manger, maniac, manicure, manner, manners, mantelpiece, Manx cat, many, map, marble, marbles, march (v.), march (n.), March, March-hare, marching, mare, Marie, marigold, mariner, mark (v.), mark (n.), market, marketing, market-man, market-wagon, marmalade, marquis, marriage, married, marry, marshmallow, Martha, marvellous, Mary, mash, mashed, mask, mass, Massachusetts, massage (n.), massage (v.), mast, master, mat, match (n.), match (v.), mate, material, matter (n.), matter (v.), matting, mattress, Maud, may, May, Mayflower, mayonnaise, me, meadow, meadow-lark, meager, meal (corn), meal (dinner), mean (v.), mean (adj.), meanest, meaning, meant, measles, measure (v.), measure (n.), meat, mechanical, mechanical drawing, medal, meddle, meddle-

some, medicine, Medusa, meet, melt, melting, member, memorandum, men, menagerie, mend, mended, menthol, mention, merchant, merciful, Mercury, mercy, merely, meringue, mermaid, merrily, merry, merry-go-round, mesmerize, mess, message, messenger, met, metal (n.), metal (adj.), method, Methodist, mew, mewing, Mexico, mice, Midas, middle, midnight, midst, might (v.), might (n.), mighty, Mike, mild, Mildred, mile, military, milk (n.), milk (v.), milk-bottle, "milkish," milk-maid, milk-punch, milk-shake, milk-wagon, milk-weed, milky, mill, miller, Miller, million, mill-wheel, "Mimi," mince-meat, mind (v.), mind (n.), mine (pron.), mine (n.), miner, mineral-water, Minerva, mingling, Mingo, miniature, minister, Minnehaha, minnows, Minotaur, mint julep, minute (n.), minute (adj.), miraculous (culous), mirror, mischief, mischievous, miserable, miss, Miss, mistake, mistaken, mistress, misty, mitten, mix, mixture, moan (n.), moan (v.), moccasin, mocking, mocking-bird, model (n.), model (v.), modelling-clay, moderately, modest, modestly, Molly Cotton tail, moment, "Momsey," Monday, money, moisten, monkey, "monkey-doodle," monster, monstrosity, month, monument, moo! mood, moon, moonlight, moose, mop (n.), mop (v.), Mordecai, more, moreover, morning, morning-dress, morning-glory, Morris-chair, Morse, morsel, Moses, mosquito, moss, mossy, most, motorboat, motorcycle, motorman, moth, moth-balls, mother, Mother Goose, Mother Hubbard, mother-in-law, mother-of-pearl, motion, motto, mould, mouldy, mounted, Mount Crescent, Mount Etna, Mount Pleasant, Mount Vernon, mountain, mourn, mournful, mournfully, mourning, mourning-dove, mouse, mouse-trap, mouth, mouthful, move, movement, moving-pictures, mow, mower, Mr., Mrs., much, mucilage, mud, mud-cakes, mud-colored, muddy, muff, muffin, mug, mule, mummy, mummy-case, munch, murder (n.), murder (v.), murderer, murmur (n.), murmur (v.), murmuring, muscle, museum, mush, mushroom, mushy, music, musical, music-book, music-box, musician, muslin, must, mustache, mustard, Mutt, mutter, mutton, mutton-chop, muzzle, muzzled, my, myself, mysterious, mysteriously, mystery.

Nab, Nabisco, nag, nail (n.), nail (v.), nail-brush, nail-polish, nain-sook, naked, namby-pamby, name (n.), name (v.), Nana, Nancy, Nannie, nap (n.), nap (v.), napkin, napkin-ring, Narcissus, narrow, narrower, nasturtium, nasty, nation, national, National Museum, native, natural, naturally, nature, naughtiest, naughtiness, naughty, navy, nay, near, nearest, nearby, nearly, near-sighted, neat, "neatening," neatly, necessary, neck, necklace, neckpiece, necktie, Ned, need (n.), need (v.), needle, neglect, negro, neighing, neighbor, neighborhood, neither, Nell, nephew, Neptune, nerves, nervous, nest, nestle, net, netting, never, nevertheless, new, newest, New Jersey, New York, New York Herald, news, newsboy, newspaper, New Year, next, Niagara, nibbling, nice, nicely, nicer, nicest, Nicholas, nickel, nick-name, niece, Nigel, nigger, night, nightcap, nightgown, nightmare, nine, ninetins, nineteen, ninety, ninth, nip (n.), nip (v.), nipple, no, Noah's Ark, nobody, nod, nodding, noise, noisy, Nokomis, none, nonsense, nook, noon, nor, Norfolk, north, northern, Northern Lights, North Pole, north-west, Norumbega Park, nose, nosing, nostril, not, note (n.), note (v.), note-book, note-paper, notes (music), nothing, notice, Nova Scotia, novel, November, now, nowadays, nowhere, nubbin, nude, nudge, nuisance, number, nurse (n.), nurse (v.), nursery, nursemaid, nut, nut-cracker, nut-shells, nuzzle, nymph.

O, oak, oar, oats, oatmeal, obedient, obey, object (n.), object (v.), objection, obligation, oblige, obliging, oblong, obstinate, occasion, occupy, ocean, October, odd, odious, of, off, offer, office, officer, often, ogre, Ogunquit, Oh, oil (n.), oil (v.), oily, ointment, old (n.), old (adj.),

Old English, old-fashioned, Old Glory, old-maid, Old Point Comfort, olive, olive-oil, omega, omelet, on, once, one, one-seated, only, onion, Opechee, open (v.), open (adj.), opening, opera, opera-glasses, (be) operated, operation, opinion, opportunity, opposite, or, orange (n.), orange (adj., color), orange-blossoms, orange-phosphate, orange-stick, orchard, orchestra, order (n.), order (v.), orderly, ordinary, O'Reilly, organ, organist, oriole, ornament (n.), ornament (v.), ornamental, orphan, orphan-asylum, ostrich, other, otherwise, Otis, otter, ouch, ought, our, ours, ourselves, oust, out, outcry, outer, outlandish, out-of-doors, outlook, outrage, outrageous, outside, outskirts, oven, over, overcast, overcoat, overcome, overflow, overshoes, overskirt, ow! Owaisa, owe, owl, owlet, own (adj.), own (v.), owner, ox, oxen, oxygen, oyster.

Pack (n.), pack (v.), package, packing, pad, paddle, paddles, page (leaf), page (boy), paid, pail, pain (v.), pain (n.), painful, painlessly, paint (n.), paint (v.), paint-box, paint-brush, painter, painting, paints, pair, palace, pale, pallisades, palm, palm-tree, pan, pan-cake, Pandora, pane, panel, pansy, pant, pantaloons, panther, panting, pantry, pap, papa, paper, papoose, paprika, parade (n.), parade (v.), Paradise, parasol, pardon, parents, Paris, park, Parker House, parlor, parlor-car, Parmesan-cheese, parquetry, parrot, parsley, part (n.), part (v.), Parthenia, particle, particular, particularly, parting, partner, party, party dress, pass, passage, passé, passenger, passion, passionate, past, paste (n.), paste (v.), pasteboard, pastry, pasture, pat (n.), pat (v.), patch (n.), patch (v.), path, pathetic, Pathfinder, pathway, patience, patient (adj.), patient (n.), patiently, patrol-wagon, patter, pattering, pattern, Paul, Paul Revere, Pauline, paved, pavement, pavilion, paw (n.), paw (v.), pawn, pay (n.), pay (v.), pea, peace, peaceful, peacefully, peace-pipe, peach, "peacherine," peacock, peanut, pear, pearl, pearly, peck (n.), peck (v.), peculiar, pedal, pedamobile, peddler, pedestal, peel (v.), peel (n.), peeling, peep (v.), peep (n.), peering, peg, Pegasus, pegged, pelican, pen, pencil, pendant, Penelope, Penguin, pen-knife, penny, penny-royal, pentagon, people, pepper, peppermints, peppery, perceive, perch, perched, perfect, perfectly, perform, performance, performing, perfume, perhaps, period, perished, perk, permission, permit, Perseus, Persian, persimmon, persist, person, personage, perspiration, perspire, persuade, pert, pest, pester, pet (v.), pet (n.), petal, Pete, Petens, Peter, Petersburg, petticoat, pheasant-hen, Philadelphia, Philamon, Philip, Philip-pines, philosophy, phone (n.), phone (v.), phonograph, photograph, piano, pianist, piazza, pick, pick-a-back, pickled, pickles, picnic, picture, picture-frame, picturesque, pie, piece, pier, pierce, pig, pigeon, piggish, pig-headed, pig-sty, pig-tail, pile (n.), pile (v.), Pilgrims, pill, pillar, pillow, pillow-case, pimple, pin (n.), pin (v.), pinafore, pinch, pin-cushion, pine (n.), pine (v.), pine-apple, pine-cone, pink, "pink-eye," pint, pipe, pips, pirate, pirates' flag, pistol, pit, pitch, pitcher, piteously, pith, Pittsburg, pity (v.), pity (n.), placard, place (n.), place (v.), plaid, plain (n.), plain (adj.), plainer, plainly, plait, "plak" (play), planet, plank, plant (n.), plant (v.), plaster (n.), plaster (v.), plate, platform, platter, play (games), play (music, v.), play (n.), playful, playmate, playthings, pleading, pleasant, pleasantly, please, pleasure, pleat, pleated, pleates, plenty, plot, plucked, plum, plum-cake, plumed, plumes, plump, plumpest, plunge (n.), plunge (v.), plus, poach, poached, Pocahontas, pocket, pocket-book, poem, poh, point (v.), point (n.), pointed, pointing-finger, poise, poison (n.), poison (v.), poison-ivy, poisonous, poke (n.), poke (v.), poker, (rod), poker (game), Polar-bear, pole, policeman, polish (v.), polish (n.), polished (adj.), polite, politely, polka-dot, pompon, pond, pony, pony-cart, pool (game), poor

(n.), poor (adj.), pop, pop-corn, "Popsy," "Popsy-wopsy," porch, porcupine, pork, porridge, porter, Porter, portrait, Portuguese, position, positively, possess, possession, possible, possibly, possum, post (v.), post (n.), postal, postman, postoffice, postpone, pot, potato, Potomac, pottering, pottery, Potts, pounce, pound (n.), pound (v.), pounding, pour, powder (n.), powder (v.), powder-box, powdered, powder-puff, powdery, power, practically, practise (music), prairie-dog, praise, praises, prance, prancing, prate, pray, prayers, prayer-book, preach, preacher, precious, prefer, preparations, prepare, prescribe, prescription, presence, present (n.), present (v.), present (adj.), presently, preserve, preserves, preserved, president, press, Preston, presume, pretence, pretend, prettier, prettiest, prettily, pretty, pretzel, prevent, price, prick, prickle, prickles, priest, prim, primer, prince, princess, princess-slip, principal, print (n.), print (v.), printed, printing, prism, prison, prisoner, private, privately, prize (v.), prize (n.), probable, probably, proceeding, procession, proclaim, produce, profile, profound, program, projection, promise (n.), promise (v.), prompt, promptly, prone, pronounce, prop, proper, properly, proposition, Proserpina, "Prosit," protect, protected, protest, provisions, prunes, pshaw, Psyche knot, public (n.), public (adj.), publish, pudding, puddle, puff (n.), puff (v.), puff-ball, puffed-rice, puffing, pugh, pull (n.), pull (v.), pullet, Pullman-car, pulp, pulpit, pulse, pumice-stone, pump (n.), pump (v.), pumper-nikel, pumpkin, pumpkin pie, punch (n.), punch (v.), punch (n., drink), Punch and Judy, punch-bowl, punch glasses, punish, punishment, pupil, puppy, pure, purely, Puritans, purple, purpose, purr, purring, purse, pursued, push (n.), push (v.), pusher, puss, Puss-in-boots, pussy-cat, pussy-willow, put, puzzle, puzzling, pyjamas, pyramid.

Quack, quacking, quail, quantity, quarrel (v.), quarrel (n.), quarrelsome, quarry, quart, quarter, que, queen, Queen Anne's lace, queer, queerest, quench, question, quick, quicker, quickest, quickly, quicksilver, quiet (n.), quiet (adj.), quietly, Quilp, quilt, quit, quite, quiver.

Rabbit, raccoon, race, racing, racket, rackets, radiator, radish, rag, rage, raging, ragged, ragman, railroad, rain, raining, rainbow, raincoat, rainy, raise, raisin, rake, raking, ram, ran, rang, Rapidan, rapid, rapidly, rapture, rascal, rat (animal), rat (hair), rate, rather, rattle (n.), rattle (v.), rattlesnake, ravel, raveling, raw, ray, reach, (n.), reach (v.), read, readily, reading, ready, real, real-life, realize, Rear-admiral, rearing (adj.), rearing (v.), reason, Rebecca, receipt, receive, reckless, reckon, reception, reciprocated, recognize, record, recover, rectangle, red, Red-coats, Red Cross, reddish, reddish-yellow, red-hot, "rediculous," red-start, Red Riding Hood, reform-school, refreshing, refreshments, refuse, register, "regliar" (regular), regret, rehearsal, relation, relatives, relief, relieve, remain, remember, remind, repeat, repeatedly, reply (v.), reply (n.), reproach, request, rescue (n.), rescue (v.), resent, reservoir, residential, resistance, resisted, resolution, resolved, respect, respectable, respectful, responsible, rest (n.), rest (v.), restaurant, restful, resting-place, restless, restlessly, restore, result (n.), return (n.), return (v.), revive, revolver, reward (n.), reward (v.), Reynard, Reynard le Subtil, Reynolds, rhinoceros, rhomboid, rhubarb, rhyme (n.), rhyme (v.), rib, ribbon, rice, rich (n.), rich (adj.), Richard Coeur de Lion, riches, richly, Richmond, rid, riddle, ride (n.), ride (v.), rider, riding, rifle, right (not left), right (correct), right angle, rim, rind, ring (n.), ring (v.), ring-finger, ringing, ringlets, rip, ripe, Rip Van Winkle, rise, rising, river, road, road-side, roaming, roar (n.), roar (v.), roaring, roast, roast-beef, roasting, rob, robber, robber-band, robe, Robert, Roberta, robin, Robin Hood, "Ro-Bo," rock (n.), rock (v.), Rock Creek Park, rocking-chair, rocking-horse, rocky, roe-buck, roll (n.),

roll (v.), roller-coaster, roller-skates, rolling, roly-poly, Roman, romancing, Rome, romp (n.), romp (v.), rompers, romping, roof, roof-garden, room, Roosevelt, rooster, root, rooting, rope, rosary, rose (n.), rose (v.), Rose, rose-leaf, rosette, rosy, rotten, rough, roughest, "rough-house," round (adj.), round (prep.), row (n.), row (v.), rowboat, Rowena, Roxana, Roxie, royal, rub, rubber, rubber-band, rubbers, rubbish, ruby, rude, rudely, rudeness, ruder, rudest, ruffian, ruffianly, ruffle, ruffled, rug, ruined, ruins, rule (n.), rule (govern), rule (draw), ruler (monarch), ruler (stick), rumple, rumpled, Rumpel-Stiltschen, run, rung, runners, running, rush, rushes, rushing, Russian, rust (v.), rust (n.).

Sack, sacque, sacred, sacrifice (n.), sacrifice (v.), sad, saddest, saddle (n.), saddle (v.), sadly, sadness, safe, safety, safety-pin, Sage, sail (n.), sail (v.), sailboat, sailing, sailor, sailor-collar, saint, sake, salad, Sally Anne, salt, salt-cellar, salty, salute (n.), salute (v.), same, Sampson Brass, sanatorium, sand, sand-heap, sandal, sandwich, sandy, sapphire, sappy-head, Saracen, Sarah Bernhardt, Sargent, sash, sat, satisfy, saucer, saucy, Saunders, sausage, savage (n.), savage (adj.), save, saw (n.), saw (v.), sawdust, saxifrage, Saxon, say, scalawag, scald, scalding, scale (music), scale (weight), scalp (n.), scalp (v.), scamp, scar, scarce, scarcely, scare, scare-crow, scared, scarf, scarlet, scarlet-tanager, scat, scatter, scene, scenery, sceptre, scheme, Schmidt, Schneider, scholar, school, school-day, school-house, school-mate, school-teacher, schooner, Schweitzer cheese, scientific, scissors, scold, scolding, scoop (n.), scoop (v.), scoot! scorn (n.), scorn (v.), Scotch, Scotchman, Scotland, Scott, scowl, scramble, scrambled eggs, scrap, scrape, scratch (n.), scratch (v.), scream (n.), scream (v.), screaming, screech, screeching, screen, screw (n.), screw (v.), scribble, scribbling, scrub, scrubbing, scrubbing-brush, sea, sea-gull, seal (n.), seal (v.), search, Searle, seashore, season, seat, seated, second (n.), second (adj.), secret (n.), secret (adj.), secretary, secretly, sedately, see, seed, seedless, seek, seem, seen, see-saw, seize, select, self, selfish, selfishly, sell, semicircle, send, sense, sensible, sent, sentinel, separate (adj.), separate (v.), September, serious, seriously, servant, servant-girl, serve, set (in), set (v.), settle, seven, seventeen, seventeenth, seventh, seventy, several severe, severely, sew, sewer, sewing, sewing-case, sewing-machine, sewing-woman, sexton, shabby, shade (color term), shade (shadow), shade (v.), shades (blinds), shadow, shady, shaft, shaggy, shake (n.), shake (v.), shaking, shall, shallow, shame, shameful, shampoo (n.), shampoo (v.), shamrock, shape, shaped, share (n.), share (v.), sharp, sharpen, sharper, shave, shawl, she, shed (v.), shed (n.), sheep, sheer, sheet, shelf, shell (n.), shell (v.), shelter, Shenandoah, shepherd, Shepherds', Shetland pony, shield, shift, shine (n.), shine (v.), shining, shiny, ship (n.), ship (v.), shipwreck, shirt, shiver (n.), shiver (v.), shivering, shock, shocked, shocking, shoe (n.), shoe (v.), shoemaker, shoe-store, shoo, shook, shoot, shop, shopgirl, shopkeeper, shopping, shore, short, shorter, shortest, shot (n.), shot (v.), should, shoulder, shoulder-blade, shout (n.), shout (v.), shouting, shove (n.), shove (v.), shovel (n.), shovel (v.), show (n.), show (v.), shower, shower-bath, shredded, shrewd, shriek, shrieking, shrill, shrivelled, shrug (n.), shrug (v.), shudder (n.), shudder (v.), shuffle, shuffling, shut (v.), shut (adj.), shutter, shy, shyness, sick, sickening, sickly, sickness, side, sideboard, sidewalk, side-ways, Sidney, sieve, sift, sifter, sigh (n.), sigh (v.), sighing, sign (n.), sign (v.), signal, silence, silent, silently, silk (adj.), silk (n.), silken, silky, sill, silly, silver, silvery, simple, simpler, simpleton, simply, since, sincerely, sing, singer, singing, single, singular, sink (n.), sink (v.), sinking, sip (n.), sip (v.), siphon, sir, sirup, sister, Sisters, sister-in-law, sit, sitting-room, six, sixteen, sixteenth, sixth,

sixty, size, sizzle, sizzling, skate, skates, skedaddle, skidoo, skeleton, skiff, skilful, skim, skin (n.), skin (v.), skip (n.), skip (v.), skipper, skipping, skull, skurry, sky, slam (v.), slam (n.), slang, slanting, slap (n.), slap (v.), slap-dash, slate, slave (n.), slave (v.), slay, sled, sleep (n.), sleep (v.), sleeper, sleeping, sleeping-car, sleepy, sleepy-head, sleet, sleeve, sleigh, slender, slew, slice (n.), slice (v.), slick, slid, slide, slided, slight, sling, slip, slipper, slippery, slit (n.), slit (v.), slobber, slobbering, slow, slow-down, slowly, slumber, slumbering, slush, slushy, sly, slyly, smack (n.), smack (v.), small, smaller, smallest, smart (adj.), smart (v.), smash, smear (n.), smear (v.), smeary, Smedes, smell (v.), smell (n.), smelling, smelly, smelt (n.), smelt (v.), smile (n.), smile (v.), smiling, smoke (n.), smoke (v.), smoking, smoky, smooth (adj.), smooth (v.), smother, smut, Smutty, snack, snail, snake, snaky, snap, snapshot, snatch, sneak, sneaking, sneeze (n.), sneeze (v.), snip, snipe, snippers, snoodles, snooze, snoozing, snore, snoring, snort, snorting, snout, snow, snowing, snowball, snowman, snowy, snub-nose, snuff, snug, snuggle, so, soak, soaking, soap (n.), soap (v.), soap-bubble, soapy, sob (n.), sob (v.), sobbing, sock, soda, soda-water, sodium-phosphate, sofa, soft, softening, softly, sold, soldier, soldier-boy, soldier-cap, solemn, solemnly, solid (n.), solid (adj.), solitaire, solitary, some, somebody, somehow, somersault, something, sometime, sometimes, somewhere, son, song, song-sparrow, son-in-law, soon, soot, sooty, sopped, sorcerer, sore (adj.), sore (n.), sorely, soreness, sorrow, sorrowful, sorrowfully, sorry, sort (v.), sort (n.), Sothern, sought, soul, sound (n.), sound (adj.), soundly, soup, soup-plate, sour, sour-kraut, south, South America, souvenir, sow, space, spade, Spain, spangled, spangles, Spaniard, Spanish, spank, spanking, spare (adj.), spare (v.), spark, sparkle, sparklet, sparkling, sparrow, speak, spear, special, specially, speck, speckled, spectacle, spectacles, speech, Speedwell, spell (n.), spell (v.), spelling-book, Spence, spend, spent, Sphinx, splice, spicy, spider, spider-web, spigot, spill, spin, spinach, spine, spinning-wheel, spirit, spit, spitting, splash (n.), splash (v.), splashing, splendid, splendidly, splinter, split, spoil, spoiled, sponge, sponge-cake, spoon, spoonful, spot, spotted, Spotty, spout, sprained, sprawling, spread (n.), spread (v.), spree, sprig, spring (water), spring (jump), spring (v.), Spring, spring-beauties, spring-house, spring-water, sprinkle, sprout (n.), sprout (v.), spruce, spry, spun, spur (n.), spur (v.), spurt, spy, spy-glass, squabble, square (n.), square (adj.), squash (n.), squash (v.), squat, squatting, squaw, squeak (n.), squeak (v.), squeaking, squeal (n.), squeal (v.), squealing, squeeze (n.), squeeze (v.), squire, squirrel, squirt, stab, stable, stack (n.), stack (v.), staff, stage, stage-coach, stagger, stain (n.), stain (v.), stair, staircase, stalactite, stalagmite, stale, stalk, stammer, stamp (letter), stamp (pound), stamps, stand (n.), stand (v.), standing, Staples, star, starch (n.), starch (v.), stare, star-light, start (n.), start (v.), startle, starve, starving, St. Aspinquid, state, stately, state-room, station, station-house, statue, Staunton, stay, steady, steak, steal (rob), stealing (creeping), steam, steam-boat, steam-cars, steam-engine, steaming, steam-pipes, steam-whistle, steed, steel, steep, steepest, steeple, steer, steering, stem, step (n.), step (v.), step-father, Stephen, step-ladder, step-mother, stepping-stones, step-sister, stern, St. Gaudens, stick (v.), stick (n.), sticking-plaster, stick-pin, sticky, stiff, stiffen, still (yet), still (quiet), sting (n.), sting (v.), stir, stirrup, stitch (n.), stitch (v.), St. Margaret's, Stokesville, stomach, stomach-ache, stone, stone-cold, stone-work, stony, stool, stoop, stop (n.), stop (v.), stopper, storage, store, store-keeper, store-room, stork, storm (n.), storm (v.), stormy, story (tale), story (house), story-book, story-teller, stove, stowaway, straight, straighten, strange, stran-

ger, strap, Strauss, straw, strawberry, straw-hat, streak, streaky, stream, streaming, street, strength, strenuous, stretch, stretcher, Stribling Springs, strictly, striding, string (n.), string (v.), stringy, strip, stripe, striped, stroke (n.), stroke (v.), strong, stronger, strongest, struggle (n.), struggle (v.), struggling, study, stuff (n.), stuff (v.), stuffing, stumble, stump, stupid, stupidity, stupidly, sturdy, St. Valentine's day, sty (pen), sty (ulcer), style, stylish, subway, succeed, success, successful, such, suck, sucking, sudden, suddenly, suffer, suffering, sufficient, sufficiently, suffocate, suffocatingly, sugar, sugared, sugary, suggest, suit (v.), suit (n.), suitable, suitcase, sultan, sultry, sumach, summer, summer-house, summery, sun, sunbeam, sunburned, Sunday, Sunday-school, sunk, sunset, sunshine, sunshiny, superb, superbly, superintendent, superior, supper, supply, suppose, sure, surely, surf, surface, surgeon, surgical, surname, surprise (n.), surprise (v.), surprising, surround, Susan, suspect, suspenders, swallow (bird), swallow (n., drink), swallow (v.), swan, swan's down, swarm (n.), swarm (v.), swat, swatter, sway, sweater, sweating, sweep, sweet, sweet-bread, sweeten, sweetheart, sweetly, sweetly-pretty, sweetness, sweet-potato, sweets, swell, swelling, swift, swiftly, swim (n.), swim (v.), swimmer, swimming, swimming-pool, swing (n.), swing (v.), swinging, Swiss, switch (n., tracks), switch (n., stick), switch (v.), Switzerland, swoon, swoop, sword, sycamore, syphon, syrup.

Table, tablecloth, tablecover, table-manners, tablespoon, tablet, tack (n.), tack (v.), Taft, tag (v.), tag (n.), tail, tailor, take, talcum powder, tale, talk (n.), talk (v.), talker, tall, tambourine, tame (adj.), tame (v.), tamer, Taming of the Shrew, tan (n.), tan (adj.), tan (v.), tandem, tangle, tangled, tank, tankard, tantrum, tap (n.), tap (v.), Tap, tape, tape-measure, taper (n.), taper (adj.), tapestry, tapioca, tapping, Tapster, Tarr, tarradiddle, tarred and feathered, task, tassel, taste (n.), taste (v.), Tattycorum, taught, tavern, taxicab, tea, teach, teacher, tea-cup, team, tea-party, tea-pot, tear (n.), tear (v.), tears, tease (n.), tease (v.), tea-set, teasing, teaspoon, teatable, Teco, Teddy, Teddy-bear, teeny, teeter-tauter, teeth, teething, telegram, telegraph-pole, telegraph wires, telephone (n.), telephone (v.), telescope, tell, temper, temperate, temperature, temple (building), temple (forehead), ten, tender, tender-hearted, tenderly, tennis, tennis-court, tennis-ball, tennis-racket, Tennyson, tent, tenth, terrace, terrapin, terrible, terribly, terrified, terrify, terror, tête à tête, than, thank, thankful, thanks, Thanksgiving, that, thawing, the, theatre, theatrical, thee, their, them, Theo, themselves, then, there, therefore, thermometer, these, they, thick, thicker, thickest, thickly, thief, thimble, thin, thing, think, third, thirsty, thirteen, thirteenth, thirtieth, thirty, this, thistle, Thompson-Seton, thorn, thorny, thorough, thoroughly, those, thou, though, thought (n.), thought (v.), thoughtful, thousand, thread (n.), thread (v.), threaten, threatening, three, three-branched, three-pronged, throat, throne, through, throw (n.), throw (v.), thrush, thrust, thumb, thumb-nail, thump (n.), thump (v.), thunder (n.), thunder (v.), thunder-storm, Thursday, thus, thy, thyself, tick (n.), tick (v.), ticket, ticking, tickle, ticklish, tick-tack, tide, tidy, tie (n.), tie (v.), tiger, tight, tighten, tightly, tight-rope, tights, tile, till, tilt, time, time-being, time-table, timid, tin, ting-a-ling, tingle, tink-a-tink, tinkle, tiny, tip (n.), tip (v.), tippet, tip-toe, tip-top, tire, tired, tiresome, tissue-paper. Titanic, to, toad, toad-stool, toast, tobacco, Tobias, Toby, today, toddling, toe, together, toil, toiling, toilet (n.), toilet (adj.), told, toll, Tom, tomahawk, tomato, tomb, tomboy, tombstone, Tommy-Atkins, tomorrow, tone, tongs, tongue, tonic, tonight, too, took, tool, toot, tooth, toothache, toothbrush, toothless, toothpick, toothpowder, tooting, top (upper),

top (toy), top-knot, topple, topsy-turvy, torch, tore, torment (n.), torment (v.), tormenting, tornado, torpedo, torrent, tortoise, torture (n.), torture (v.), toss, tossing, tot, total, totally, tote, tottering, touch (n.), touch (v.), tough, toughest, tournament, tourney, tousle, towards, towel, tower, Tower Hill, towering, town, toy (n.), toy (adj.), toy-shop, trace (n.), trace (v.), tracing, track, tradesman, tragedy, tragic, trail, trailing, train (cars), train (dress), train (v.), trained, trained-nurse, trainer, traitor, tramp, tramping, trample, transform, transom, trap (n.), trap (v.), trap-door, trapeze, trash, trash-barrel, travel, traveller, travels, tray, treacherous, tread, treadle, treasures, Treasury, treat (n.), treat (v.), treatment, tree, tree-frog, tremble, trembling, tremendous, tremendously, trench, Trenton, tressel, tresses, trial, triangle, trick, trick (in cards), trickle, trickling, trickster, tricky, tricycle, trifle, trigger, trillion, trim, trimming, trip (n.), trip (v.), trod, Trojans, trolley, troop, trot, troubadour, trouble (n.), trouble (v.), troublesome, trough, troupe, trousers, trowel, Troy, truck, trudging, true, truly, trump, trumpet (n.), trumpet (v.), trumpeter, trumpet-shaped, trunk (box), trunk (proboscis), trunk (tree), trust, trustworthy, trusty, truth, truthful, try, trying, tub, tube, tuck (n.), tuck (v.), Tuesday, tuft, tugging, tulip, tumble (n.), tumble (v.), tumbler, tune (n.), tune (v.), tuner, tunnel, turban, Turk, turkey, turkey-trot, turn (v.), turn (n.), turning, turnip, turpentine, turtle, tusk, tut! tu-whit, tu-whoo, twaddle, tweak, twelfth, twelve, twentieth, twenty, twice, twig, twilight, twin-colds, twinkle (n.), twinkle (v.), twinkling, twins, swirl, twist, twisted, twitter (n.), twitter (v.), twittering, two, typewriter (person), typewriter (machine), typhoid-fever.

Ugly, uglier, ugliest, Ulysses, umbrella, unbutton, Uncas, uncle, uncomfortable, uncover, under, under-body, underclothes, underground, underneath, understand, undertake, undo, undress, uneasy, unfold, unfortunate, unfortunately, unfurl, ungrateful, unhappy, unhealthy, unicorn, union, Union Station, unique, United States, unkind, unless, unlock, unpack, unpainted, unravel, unripe, unspeakable, unthreaded, untidy, untie, until, up, up-a-daisy, "upjar" (pitcher), Upjohn, upon, upper, uprooted, upset, upside, up-stairs, uptown, "Urachet," urchin, urging, us, use (n.), use (v.), useful, usher, usquebaugh, usual, usually, utter (adj.), utter (v.), utterly.

Vacant, vacation, vaccinate, vaccination, vain, valentine, valiant, valise, valley, valuable, value, vanilla, vanish, vanquish, variety, varnish, vase, vaseline, vaudeville, veal, vegetable, veil, vein, velvet, velveteen, Venetian blinds, vengeance, venison, venison-pasty, venture (n.), venture (v.), Venus, veranda, vermicelli, verse, very, vessel, vest, vex, viaduct, vice, Vichy, vicious, Victoria, victorious, view, vigorous, village, villain, villainous, vine, vinegar, violent, violet, violin, violinist, Virgin, Virginia, visit (n.), visit (v.), visiting-card, visitor, voice, vote, vulgarian.

Wabble, waddle, waddling, wafer, wag, waggle, wagon, wah, wailing, waist, wait (n.), wait (v.), waiter, waitress, waive, wake, walk (n.), walk (v.), wall, wallet, wall-paper, walnut, wand, wander, wanderer, want (n.), want (v.), war, war-club, ward, war-dance, Wardsville, warwhoop, warm (adj.), warm (v.), warn, warning, war-paint, warrior, wart, was, wash (n.), wash (v.), washboard, wash-day, washerwoman, Washington, Washington Monument, Washington Post, wash-rag, wash-stand, wash-tub, wasp, waste (v.), waste (adj.), wastebasket, watch (v.), watch (n.), watch-dog, water (n.), water (v.), water-baby, water-cress, water-fall, watering-pot, water-lily, watermelon, water-proof, water-snake, water-wings, watery, wattles, wave (n.), wave (v.), waving, wax (n.), wax (adj.), wax-works, way, wayside,

we, weak, weakly, weapons, wear, weary, weasel, weather, weave, web, wedding, wedding-gown, wedding-guests, Wednesday, week, weep, weeping, weeping-willow, weigh, weight, welcome (v.), welcome, (adj.), well (n.), well (adj.), well-bred, Welsh-rabbit, Wendell, went, wept, were, wet (v.), wet (adj.), wetting, whale, wharf, what, whatever, wheat, wheat-field, wheel (n.), wheel (v.), wheelbarrow, when, whenever, where, whereabouts, wherever, wheateana, whether, whew, whey, which, while, whimpering, whine, whining, whinny, whip (n.), whip (v.), whipping, whippoorwill, whirl, whisk, whiskered, whiskers, whiskey, whisper (v.), whisper (n.), whistle (n.), whistle (v.), white (n.), white (adj.), White House, White Mountains, Whitey, who, whoa, whoever, whole (n.), whole (adj.), whom, whoop (n.), whoop (v.), whooping cough, whose, why, wicked, wickedly, wickedness, wicker, wide, widest, width, wife, wig, wiggling, wigwam, wild, wild-cat, wildest, wildness, will (n.), will (v.), William, willing, willingly, Willis, willow, wilted, win, Winchester, wind (n.), wind (v.), winding, windmill, window, window-frame, window-sill, windward, windy, wine, wine-glass, wine-sap, wing, wing-bone, winged, wink (n.), wink (v.), winner, Winston, winter, wintergreen, wipe, wire, wisdom, wise, wisely, wish (n.), wish (v.), wish-bone, witch, with, wither, withered, without, wits, wizard, wolf, woman, won, wonder (v.), wonder (n.), wonderful, wondering, wood, wood-box, wood-cutter, wooden, wood-pecker, woods, wool, wool-gathering, woolen, woolly, word, wore, work (n.), work (v.), workbag, workbasket, workman, world, worm, worn, worn-out, worried, worry (v.), worry (n.), worse, worsen, worst, worsted, Wortens, worth, worthless, Wortsey, would, wound (n.), wound (v.), wounded, woven (adj.), woven (v.), wrap, wrapper, wreath, wreck (n.), wreck (v.), wren, wrench, wrestle, wretch, wretched, wriggle, wriggling, wring, wringing wet, wrinkle, wrinkled, wrinkles, wrist, write, writing, writing-case, writing-paper, wrong, wrote.

Yacht, yak, yard (measure), yard (garden), yarn, yarrow (flower), Yarrow (name), yawn (n.), yawn (v.).

THE LANGUAGE OF A THREE-YEAR-OLD CHILD

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The increasing recognition of the importance of all phases of child study is sufficient excuse for the investigation described in the following pages. If the results of this study should stimulate some one else to "go and do likewise," thus adding to the small fund of reliable information on this subject now available, so that finally there may be enough material from which to formulate some valid principles concerning the early stages of linguistic development, then this effort will have been of some value.

Biography—Just as any phenomenon is more accurately interpreted when studied in connection with its surroundings, so the vocabulary or language of a child at any particular period becomes more instructive when accompanied by at least some description of the conditions under which the language has developed. Accordingly, with the aid of G's mother, I have made out the following biographical sketch of our child, Gladys, giving only those points which I consider of interest in such a study.

G's life so far has been quiet and uneventful, in every respect that of an ordinary normal child.¹ She was born and lived during the first thirty-one months in a small town near Denver, Colorado. During the next three months, with her parents, she visited relatives in various parts of Iowa, coming in contact with many different people, scenes, and situations. This naturally brought many new words, especially proper nouns, into her vocabulary. Since that time until now (she is now, March 24, 1914, forty-one months of age) we have lived in Boulder, Colorado.

G's weight at birth was six pounds; at ten months, seventeen pounds; at twenty-two months, twenty-three pounds; and at thirty-eight months, twenty-nine pounds. She walked with a chair at twelve months; walked alone at sixteen months; cut her first two teeth at nine and a half months. Though

¹ G is of Scotch-German descent on the father's side and of Swedish on the mother's. Both parents are college graduates; the father is and has always been in educational work, while the mother was a high-school teacher for some time before her marriage.

small, G has always been well and strong except for one very serious sickness due to indigestion, which lasted about a month; this occurred in the eleventh and twelfth months. Being an only child, she has played very little with other children except during the thirty-fifth, thirty-sixth and thirty-seventh months when she had as playmates, two neighbor children, a boy of four and a half years and a girl of three. Since the thirty-seventh month she has played with the boy about a half hour a day. Her toys have been few and of a simple, inexpensive kind, their total value being between five and six dollars.

The first word pronounced with evident understanding was "bye-bye" at ten months. Some syllables had been uttered quite distinctly previous to this, but probably unintelligently. At twelve months the words "Papa," "Mamma" and "Baby" were distinctly pronounced. From this time on, the development was steady, but rather slow up to the end of the second year, four-word sentences being rarely used at this time. About the twenty-sixth month began a period of rapid development both in the use of new words and in clearness of enunciation, together with a gradual increase in the length of sentences. This period has really continued up to the present, the only interruption being the three months during which she played a great deal with the two children mentioned above. These three months were marked by unmistakable deterioration in sentence structure and in the number of different words used. This was so noticeable that both G's mother and I spoke of it repeatedly at the time.

We have never urged her to talk and little attention has been given to her language except that her questions in regard to the use of words have always been answered. In addition to this, her mother has, so far as time permitted, been careful to correct her grammatical errors. "Baby talk" has been scrupulously avoided in her presence and, likewise, it was not used by her until she played with the other two children, one of whom talked in a very "babyish" way. I shall discuss this more fully in another section.

Method—The method used in obtaining G's vocabulary was practically the same as that employed by Professor Guy M. Whipple in taking the vocabulary of his three-year-old child (58). A booklet of twenty-six pages was prepared, one page for each letter of the alphabet. A period of ten days was set apart for observing and recording the words used. At the close of this period followed a two-week period of searching such other child vocabularies as could be obtained, as well as the dictionary, to secure words which, it was thought,

might have been used by the child, had the proper situation arisen. When such a word was found, it was not used in G's presence, but a situation was produced intended to call forth the word, in case she was accustomed to use it; e. g., when the word "whistling" was being considered, I began whistling and G was asked, "What is Papa doing?" To this she at once replied, "He is whistling." In a similar manner each doubtful word was tested. Following this, a list was made of the words used by the child during various periods prior to this, but which had been forgotten, or which could not be recalled because of lack of proper environment. During the preceding summer, for example, such words as "mosquito," "cantaloupe" and "watermelon" were often used, but gradually as the object passed from her experience, these words were no longer used.

Principles—Following the practice of Professor Whipple and other modern child-psychologists, I have included in the vocabulary all verb forms, compounds, and inflections except the plurals of nouns, which G uses. Nursery rhyme terms and words used without any appreciation of their meaning have been omitted.

Vocabulary—As stated above I have divided the vocabulary into two parts, the one consisting of those words which G uses in her every-day affairs and which might be termed her active or conscious vocabulary; the other consisting of those words which she has known and used in the past, but does not seem to use at present; this might be called her sub-conscious vocabulary. The entire vocabulary contains 2282 words distributed among the different parts of speech as follows: nouns 1171, verbs 732, adjectives 198, adverbs 98, pronouns 36, prepositions 20, interjections 15, conjunctions 12.

The part of G's vocabulary which I have termed the sub-conscious because it is made up of words which are apparently stored away or "pigeon-holed" in sub-consciousness, brings out some interesting facts: it contains 183 words divided among the parts of speech as follows: nouns 145, verbs 25, adjectives 9, adverbs 3, interjections 1. Comparing this summary with that of the entire vocabulary we find that of every eight nouns which G learned one was "pigeon-holed," while of the verbs only one out of every thirty-three acquired was thus stored away. We may deduce from this the following facts:

1. The process of acquiring and storing away words to be used only in particular seasons or upon particular occasions

is begun very early, probably as soon as the child begins to learn words.

2. The process of storing away words goes on much faster in the case of nouns than in the case of any other part of speech.

3. Few words aside from nouns once learned by the child are forgotten.

In arranging G's vocabulary according to the parts of speech, I am well aware of the psychological incorrectness of such a classification inasmuch as children seldom use words entirely with respect to their grammatical functions as has been clearly shown by Dewey (12), O'Shea (39), and others. However it would be exceedingly difficult, if not impossible, to make a strictly psychological classification since the child is not nearly always grammatically consistent in the use of words. In the very early stages of speech-development, one word may answer for all parts of speech, while at the age of three or four years one part of speech is transformed into another to suit the needs of the occasion. For example, as G was eating her oatmeal and splattered some milk on her dress, she said, "There, Mr. Splatter, now see what you went and done;" but the following day she said to her mother, "Now be careful, Mamma, or you'll splatter milk on your dress." Again she said, "See, Papa, I put the hammer-pound back on," "hammer-pound" being her own invention meaning the head of the hammer; but in the next sentence, "Now I'm going to pound these nails," she uses "pound" with its regular verbal function. At another time when she hurt her hand, she exclaimed, "See my 'skinned.'" Yet I am convinced that at three years of age, G used a large percentage of her words according to their grammatical functions even though it was in a purely objective and imitative manner.

There has been much speculation as to the significance of the seeming preponderance of the verb element in child vocabularies, the general conclusion being that it indicates in the developing mind a predominating interest in action and hence in action words (Tracy, Kirkpatrick and others). This conclusion seems to me quite unwarranted for the following reasons: (1) The child acquires his vocabulary almost wholly through imitation. (2) It is a well known fact that any part of speech may be and often is an action word to the child. (3) The percentages of the different parts of speech, (if one counts the verb forms printed in small capitals) in the dictionary are about as follows: nouns 48.4%, verbs 27.5%, adjectives 18.6%, adverbs 4.9%, pronouns .2%, prepositions .1%, interjections .1%, conjunctions .05%. (I have obtained these results

through examination of several of the leading dictionaries). (4) In the ordinary running conversation of adult language, the language which the child naturally imitates, the noun and the verb elements are about equal. In view of these facts, the percentage of verbs in the child's vocabulary is fairly normal when compared with adult language.

Verb forms, especially irregular forms, probably give the child most trouble, and linguistic errors here persist long after the child's language is otherwise quite perfect. The prevailing impression that the child naturally experiences great difficulty in learning to use the personal pronouns correctly is generally due to the incorrect use of these words by parents or other associates in speaking to the child. The use of "baby-talk" by parents evidently retards linguistic as well as mental progress and hence this practice can not be too strongly condemned. No pains were taken to teach G to use pronouns correctly and yet she experienced no more difficulty in the use of these than of any other class of words.

Adjectives and adverbs get into the child's vocabulary long before he has any real use for them or any useful appreciation of their meanings. Thus the terms, "sorry," "naughty," "dreadful" and "comfortable" were all used by G when she was two and one half years of age, evidently a purely "physical" or imitative use. An important and commonly disregarded factor in the acquisition of any class of words by the child is the stress of voice or accompanying facial expression with which the words are spoken, since this has much to do with the vividness of the images of such words in the child's mind. Slang phrases are thus readily picked up by children, as they are usually uttered with greater emphasis than other phrases. Prepositions and conjunctions, according to this principle, are comparatively late in getting into the child's vocabulary.

One Day's Language Expression. While this vocabulary alone may serve in some measure as a key to the linguistic progress and the mental make-up of the child, I believe that a more complete and accurate estimate of the language ability may be gained if this be supplemented by at least enough of the child's daily speech to show something of the manner in which he uses this linguistic tool-chest. It is hardly sufficient to record for examination an occasional paragraph as one might easily select portions which would give a totally wrong impression. I have accordingly made an accurate record of G's entire speech during two different days, beginning when she awoke in the morning and ending when she went to sleep at night, the most typical of which was chosen for detailed

study. As far as possible the exact pronunciation and manner of speaking were noted. Sometimes one was obliged to write so rapidly that sufficient attention could not be paid the pronunciation to get it perfectly accurate. I might say in passing that G at thirty-eight months pronounced, or was able to do so when she was not careless, all the words which she knew correctly and distinctly. The last two sounds with which she experienced any difficulty were R and Th and they were mastered early in the thirty-eighth month. Even now in her forty-first month she is occasionally careless in her enunciation ; e. g. she says "somepin" at one time and "something" at another. So far as I can observe, practically every case of grammatical error or of carelessness in pronunciation can be traced to a similar one in the language of some one of her associates. Exceptions to this are some errors in verb inflections which still give her some trouble. The following summary contains what seem to me the more significant data to be secured from this record :

Data from the One Day's Language Expression

Total number of different words used.....	859
Total number of words uttered (except in singing)...	11623
Number of words in repetitions.....	1823
Number of words uttered exclusive of repetitions....	9800
Total number of sentences used.....	1873
Number of sentences exclusive of repetitions.....	1487
Number of sentences which were repetitions.....	386
Cases of repetitions.....	162
Number of interrogative sentences.....	345
Number of interrogative sentences repeated.....	31
Average number of words in repeated sentences.....	5
Average number of words in other sentences.....	6.6

Sixty per cent of the interrogative sentences were used during the first half of the day. Eighty-four and three tenths per cent of the cases of repetitions of interrogative sentences occurred during the first half of the day.

If one has any doubts as to the social tendency in children or its importance as a factor in language development, the number of words uttered in a day by a normal child ought to be fairly convincing. G spoke during this day of twelve hours and fifteen minutes approximately nine hundred and fifty words per hour ; she would no doubt have used at least five hundred more during the day, making a total of twelve thousand, had we been able to answer her questions and otherwise talk to her as much as usual. This we could not do as we were

too busy writing (G did not not suspect what we were doing, but thought we were writing letters). Large as the number of words seems, it is probably only a normal number. Gale reports a boy of two and a half years to have used 9,290 with 479 different words and another child of just two years to have used a total of 10,507 with 805 different words (20). Sanford Bell found that his child of four years and nine months uttered 14,996 words while one of three and a half years used 15,230 in a day (4). As Trettien suggests these facts indicate something as to the tremendous expenditure of energy through the vocal apparatus. Now if this tendency to linguistic expression is so strong that there is a spontaneous and continual flow of energy to such an extent through its channels, to say nothing of the amount spent in physical expression, what shall we say of a system of training which enforces a state of inactivity and silence upon children during five or six of the twelve or thirteen waking hours of the day (55) ?

The amount of repetition is somewhat surprising. Evidently a great deal of it comes from our failure to respond promptly to her remarks, for during the time from eight-thirty to nine-fifty when she played with another child there was very little repetition. The child would naturally answer her remarks or questions more readily than we would. Still there seems to be another factor involved. So far as I can ascertain, G has not discovered that what she says in speaking to one person is heard by the others present and consequently she often repeats a remark to each one present. I judge from this that when one does not respond to her remarks, she thinks he has not heard. Or it may be that she has failed so far to notice that other people when talking address the whole company and hence imitatively she does as she thinks she observes others to do. This is supported by the fact that she frequently requests me to tell her something which I have told her mother in her presence, every word of which she has distinctly heard, and she is very much offended if I refuse. Kirkpatrick says, "Children often repeat over and over a statement to make sure it is understood, and cease only when they receive assurance by word or act that they have been understood." Then there is the additional important observation that children delight in talking or babbling or exercising the vocal apparatus in any way as a sort of practice merely for the pleasure it gives them (28). It is quite probable that much of G's repetition is due to this "linguistic play" so prominent in the earlier stages of childhood.

About twenty-three per cent of the sentences used, not in-

cluding repeated sentences, were interrogatory. They are not all, properly speaking, questions, i. e. questions asked by the child for the purpose of finding out something which she does not know, or satisfying any desire unless it be the desire simply to create a response; e. g. "We don't eat dirt, do we?" "Scrape dirt off, don't we?" "Wasn't that a funny trick?" "I ain't swinging too high, am I, Mamma?" As Groos has pointed out, the child loves to cause things and causing other persons to respond to his remarks by putting them in the form of questions is a form of creating for him just as is babbling or "voice-gymnasticizing" in his earlier stages. It will be seen, however, that a fair percentage of the interrogative sentences are real questions asked in a distinctly purposeful way; e. g. "Can I help you write?" "How do we play that, Lyle?" "Don't you want this window down so it won't be cold?" "What do bears say?" "Papa, is it 'before' or 'berfore?'" "When is it Christmas?" We have discouraged her in asking questions otherwise than in an intelligent manner, believing that children are able quite early to appreciate the use and purpose of questions and that they should be encouraged in asking questions only when they have some purpose other than mere talking. It may have been merely accidental that sixty per cent of the interrogative sentences and eighty-four per cent of the repetitions of such sentences occurred in the first half of the day, but it is reasonable to suppose that this indicates greater inquisitiveness and especially greater persistency of this mental characteristic during this part of the day.

That a child uses so many different words in the course of a twelve-hour day is again somewhat surprising to the average person. The number of different words used in one day, eight hundred and fifty-nine, is seen to be thirty-seven and six tenths per cent of her total vocabulary as given in the first part of the discussion. This indicates that the child has not acquired a great many useless terms, but that, generally speaking, as soon as she came into possession of new words she made them a part of her every-day vocabulary.

One of the most significant observations to be made in connection with the record of G's speech for the day is in regard to the period from eight-thirty to nine-fifty when she was playing with another child. This playmate, L, is now past five years of age, comes from an excellent home, has a good vocabulary, uses it well, and is intellectually and linguistically considerably more advanced than the average child of five years. Counting the different words used in this period of one hour and twenty minutes, we find two hundred and forty-seven as

against two hundred and seventy-three in the first hour. On this basis she used one hundred and eighty-six different words in an hour while playing with another child, but under similar environment except that her associates were adults, the preceding hour she found necessary two hundred and seventy-three different words. One might seek an explanation for this in the fact that in the first hour she dressed herself and ate breakfast. But in the afternoon when alone with her parents in the hour from four to five o'clock, she employed two hundred and seventy-four different words. Again from three to four o'clock we find a total of two hundred and twenty-one different words ; while during the period from two to three o'clock, when G was out of doors playing to some extent with two other children as well as talking to her mother, she used two hundred and thirty-one different words.

Examining the length of sentences used while playing with L, the average number of words per sentence is found to be six and two-tenths, counting as one sentence the forty-two-word conversation over the telephone which is really made up of four sentences. Now since the average sentence length for the entire day (exclusive of repetition in both cases) is six and six-tenths words, it is evident that though the difference is slight, G used longer sentences when in the company of adults than she did while playing with the other child. Concerning pronunciation and enunciation no appreciable difference could be noticed. However, as stated early in the discussion, whenever she played with children who did not pronounce and enunciate well her speech has immediately suffered accordingly.

One of the first difficulties the child encounters in learning articulate language is that of pronunciation. Noble has worked out the following law in regard to this matter : " Correct pronunciation depends on close perception and knowledge of the motions necessary to produce sounds. Hence those sounds most easily articulated are labials and dentals ; those most difficult, the gutturals and medials " (38). The most important factors involved in a child's pronunciation are, (1) keenness of auditory perception, (2) ability to adjust the vocal apparatus, (3) sound combinations, and (4) pronunciation by the child's associates. In the very early stages when the child is learning his labials or dentals, visual perception may be a small factor in learning to pronounce ; but it has never been completely proven that the child looks at the mouth of one speaking as Noble claims. Lack of accurate perception on the part of the child as well as poor or careless pronunciation by the parents or other associates leads to many

peculiar mistakes. G at twenty-six months after hearing the song, "Leaning on the Everlasting Arms", gave this version of it, "Leanin' on Jes' I lost my arm"; just recently as she was going to bed one evening I sang, "Bring Back my Bonnie to Me," and we were awakened the next morning by her singing, "Bring my body back, bring my body back." At three years of age her pronunciation of "university" was "union-versity." Failure to get the exact auditory image was probably the important factor in each of these errors, but it was certainly not the only one. In the first case "Leaning on Jesus" was remembered because of the number of times it was repeated and because of its position as the initial phrase in the chorus of the song, and "everlasting arms," because of repetition and its position as the final phrase in the chorus; but "everlasting arms" became "I lost my arm" because these words were familiar to her and hence had some content while the former were new and meaningless. The other two cases may be similarly explained, "union-versity" being a confusion of "union-suit" and "university." Such cases as these are no doubt partly due then to "mental habit" and association and confusion of mental images.

Facility in adjustment of vocal apparatus differs widely in different children and lack of this accounts for the backwardness of some children in attempting to talk or for failure to pronounce well when they do try. Many mistakes in pronunciation may be traced to difficult sound combinations; thus G invariably says "plano" for "piano" when talking rapidly and yet she pronounces every sound in the word accurately in other combinations with no difficulty.

But the most prolific source of mispronunciation is to be found in the language of the child's associates. Where the child plays much with other children, this is to be expected; the mistakes of one child soon become the mistakes of all who play with that child. To illustrate, after G had for some time pronounced practically all her words correctly and accurately, she went to play with another child who was just learning to talk; coming home she talked after this fashion, "Dă my bỗ" ("That's my box") and "I wạ pē bỗ bỗ" ("I want a piece of bread and butter"). This happened many times and in every instance that she played with this child her pronunciation suffered in this way so that it usually took some two or three days before her language was again normal. Many authorities have referred to the advantages of playing with other children to further a child's linguistic development. "A constant association," says Doran (13), "with other children

of about the same age is an incentive to the little one to talk, and a child so situated will hear more language suited to its capacity than the child brought up in isolation;" and there may be some good ground for the belief that this is an aid in linguistic growth. But, as I have pointed out before, there were unmistakable signs of retardation in G's linguistic development in the thirty-fifth, thirty-sixth, and thirty-seventh months when she played a great deal with other children.

CONCLUSIONS

Words do not function grammatically in the early stages of linguistic development; e. g. a word may be a symbol for an object one moment, for an action the next, and for a quality at another time, or it may represent several parts of speech at once.

Acquisition of words of whatever class or kind is chiefly a matter of imitation and hence depends almost wholly upon environment. Hence to interpret fully and fairly the vocabulary of the child, the significance of the language of his parents or associates must not be overlooked.

Provided good English is always spoken in the presence of the child, he will experience greater difficulty in learning to use verb inflections properly than he will in acquiring any other class of words.

Pronouns, like any other class of words are learned largely through imitation and hence their use by the child does not indicate in him an awakening of the consciousness of the existence of distinct personalities. Pronouns are acquired and used with little more difficulty than other classes of words if they are used as much and as properly as other words in the presence of the child.

Contrary to general opinion association with other children is conducive neither to the development of a good vocabulary nor to good linguistic expression.

Inasmuch as the tendency to vocal expression in children is instinctive and gives rise to an almost continuous flow of language, any system of training for young children is defective which does not provide for constant well directed linguistic exercise.

Generally speaking, words so pronounced by the child's associates as to produce the most vivid images in his mind are most readily imitated by him; this explains largely why children pick up slang phrases so quickly.

The use of "baby-talk" by the child's associates is detrimental to his mental as well as linguistic development.

THE VOCABULARY

A, about (adv.), about (prep.), accident, ache, "achoo," across, act, acting, afraid, after (adv.), after (prep.), afternoon, again, against ago, ahead, ails, ain't, air, airship, album, all (adv.), all (n.), all right, almost, alone, along, already, always, am, Amy, an, and, animal, animal-cracker, another, answer, answered, anybody, anyhow, anyone, anything, anyway, anywhere, apiece, apple, apple-sauce, apron, Arapahoe, are, aren't, arm, around (adv.), around (prep.), arrow, Arthur, as (conj.), as (adv.), ashamed, ashes, ashpit, ask, asked, asking, asleep, at, ate, aunt, auto, automobile, awake, away, awful, awfully, ax.

"Baa," baby (n.), baby (adj.), back (n.), back (v.), back (adv.), bacon, bad (a.), bad (adv.), bag, bake, baked, baked-beans, bakerman, baking, balky, ball, banana, band, bang (n.), bang (v.), bank, bare, barefoot, barn, barrel, Bartato, basin, basket, bath, bathrobe, bathroom, bath towel, bathtub, batter, bawl, be, beads, "bean," beanbag, beans, bear, beat, beater, beautiful, beauty, Beauty, because, bed, bedroom, bedtime, bee, beef, beefsteak, been, beer, beerbottle, before, began, begin, beginning, begun, behave, behind (adv.), behind (prep.), believe, bell, belly, belong, belt, bend, bent, berry, besides, Bessie, best, bet, better, between, bib, Bible, bicycle, big, bigger, biggest, Bill, "bing," bird, birthday, biscuit, bit (n.), bit (v.), bite (n.), bite (v.), biting, black (v.), black (a.), blanket, bleeding, bleeds, blinds, blister, blocks, blood, bloomers, blotter, blow, blowing, blue, blueing (n.), blueing (v.), board, boat, body, boil, boiler, boiling, bone, bonnet, book, bookcase, boost, boots, borrow, borrowed, both (pron.), both (a.), bother, bothered, bothering, bottle, bottom, bought, Boulder, bouquet, bow, bowl, "bow-wow," box, boy, Boy Blue, bracelet, branch, Brandenburg, bread, bread-basket, bread-board, bread-can, break, breakfast, breakfast food, breaking, breast, brick, bridge, Brighton, bring, bringing, broke, broken, broom, brother, brought, brown, brown-bread, brush (n.), brush (v.), brushed, brushing, bubble, bucket, buckle, bud, bug, "bugger," buggy, build, building (n.), building (v.), built, bulldog, "bum," bump (n.), bump (v.), bumped, bunch, bureau, burn (n.), burn (v.), burning, burnt, burro, bush, bushel, "bust," busy, but, butcher, butcher-knife, butter butterfly, button (n.), button (v.), buttoned, buttonhole, buy, buzz, buzzing, by, by-and-bye, bye-bye.

Cabbage, cage, cake, calf, call, called, calling, came, Camera, Campbell, can (n.), can (v.), candle, candy, cane, can't, cap, car, cards, care (n.), care (v.), careful, Carl, carpet, carried, carrot, carry, carrying, cat, catalogue, catch, catching, caterpillar, caught, ceiling, celery, cellar, cents, certainly, chain, chair, "chair," chamber, change (n.), change (v.), Charles, Charlotte, chase, chased, check, cheese, chew, chewed, chewing, chicken, chicken-feed, chicken-house, child, children, chimney, chin, chip, chocolate, choke, "choo-choo," chop, chopping, Christmas, Christmas-tree, church, cigar, cinnamon, circus, city, clap, clean (a.), clean (v.), cleaning, clear, climb, climbing, clock, closet, cloth, clothes, clothes-bag, clothes-basket, clothes-brush, clothes-line, clothes-pin, clothes-stick, clouds, cloudy, "cluck," coal, coal-bucket, coal-shovel, coarse, coat, coax, "cockadoodle-doo," cocoa, coconut, coffee, coffee-pot, cold (n.), cold (a.), cold-cream, collar, color, comb (n.), comb (v.), combed, combing, come, comfortable, coming, company, cook, cook-book, cooked, cookies, cooking, cool, Cora, cord, core, cork, corn, corn-bread, corner, corn-flakes, cornmeal, corset, cost, cotton, couch, cough (n.), cough (v.), could, couldn't, count, couple, cover (n.), cover (v.), covered, cow, crack, cracked, crackers, cracking, cradle, cranberries, crank (n.), crank (v.), cranky, crawl, crazy, cream, cream-pitcher, creek, creep, creeping, crib, cribbage, cribbage-board, cried,

crochet, crochet-hook, cross, crumbs, crust, cry, crying, cuddle, cuff, cuff-button, cunning, cunningest, cup, cupboard, cupful, curl (n.), curl (v.), curling, curtain, cushion, custard, cut, cute, cutting.

Daddy, dance, danced, dancing, dandelion, dandy, Daniels, dare, dark, darling, darn, darning, daughter, day, daylight, daytime, dead, deal (n.), deal (v.), dear (n.), dear (a.), dearie, death, deep, deeper, deepest, Denver, Denver Post, depot, devil, diamond, dictionary, did, didn't, die, different, dig, digging, ding-dong, "dingy," dining-car, dining-room, dinner, dipper, dirt, dirty, dish, dish-cloth, dish-pan, dish-towel, ditch, dizzy, do, doctor, does, doesn't, dog, doggie, doing, doll, dollar, doll-buggy, dollie, done, donkey, don't, door, door-knob, Dorothy, double, dough, down, downhill, downstairs, Doyle, dozen, drawer, drawers, dreadful, dream, dress (n.), dress (v.), dressed, dresser, dressing, drink (n.), drink (v.), drinking, drip, drive, driver, driving, drop (n.), drop (v.), dropped, dropping, drove, drum, drum-stick, dry (a.), dry (v.), Duard, duck, dug, "Dumfo," dust (n.), dust (v.), dust-cloth, dust-pan, dusty, Dutch.

Each (pron.), each (a.), ear, early, easy, eat, eating, egg, egg-beater, eight, either, elbow, electric, electric-light, eleven, else (pron.), else (adv.), empty (a.), empty (v.), end, engine, enough (n.), enough (a.), envelope, errand, Ethel, ever, every, everybody, everything, everywhere, excuse, expect, eye, eye-winker.

Face, fall, falling, far, farther, fast, fasten, faster, fat, father, faucet, feather, feather-bed, fed, feed, feeding, feel (trans.), feel (intrans.), feeling, feet, fell, fellow, fence, Fergus, Ferguson, few, fiddle, fifteen, fifty, fig, fight, fill, filling, find, fine, finger, finger-nail, finish, finished, fire, first, fish (n.), fish (v.), fishing, five, fix (n.), fix (v.), fixed, fixing, flag, flat-iron, floor, flour, flower, Floyd, fly (n.), fly (v.), fold, folding, folks, follow, fooling, foolish, foot, football, footstool, for, forehead, forenoon, forget, forgot, forgotten, fork, forty, found, four, Frank, fresh, freeze, freezing, Friday, fried, fringe, frog, front, front-door, frosting, froze, frozen, fry, frying, frying-pan, full, fun, funny, fur, fuss, fussing, fuzzy.

Game, garden, garter, gasoline, gate, gave, Gaylord, gelatine, George, get, getting, "get-up," girl, give, glad, Gladys, glass, glasses, Glen, gloves, glue, go, "gobble," God, going, Goldilocks, gone, good, good-bye, good-morning, good-night, goose, got, grab, gracious, graham, grandfather, Grandma, grandmother, Grandpa, grapes, grass, gravy, grease (n.), grease (v.), greasy, great, green, Gregg, groceries, grocery-man, grocery-store, ground, grow, guess, gum, gun.

Ha ha, had, hadn't, hair, hair-brush, hairpin, half, hammer, ham-mock, hand (n.), hand (v.), handkerchief, handle, hang, hanging, happy, hard, hardly, has, hasn't, hat, hatpin, Hattie, have, haven't, having, hay, he, head, headache, hear, heard, heaven, heavy, heel, Helen, hello, help, helped, helping, hen, here, hers, herself, hey, hid, hide, hiding, high, highchair, hill, him, himself, his, hitch-up, hitting, hoe, hold, holding, hole, holler, home, honey, honest, hood, hook, horse, horseback, horsie, hose, hot, hotwater-bottle, house, how, hug (n.), hug (v.), hugging, hundred, hung, hungry, hunt, hunting, hurried, hurry, hurrying, hurt, hurting, hush.

I, ice, icecream, icy, if, in (adv.), in (prep.), indeed, Indian, ink, inky, inside, instead, into, Iowa, iron (n.), iron (v.), ironing (n.), ironing (v.), ironing-board, is, isn't, it, its, itself.

Jack, jacket, jack o'lantern, jail, jam, jar, jelly, jerk, jerking, jingle, Joe, joke, joking, jug, juice, juicy, Julia, jump, jumped, jumping, just.

Keep, keeping, kettle, key, keyhole, kick, kicked, kicking, kids, kill, killed, kind (n.), kind (a.), kiss (n.), kiss (v.), kissed, kissing,

kitchen, kitten, kitty, kitty-hood, knee, knife, knock (n.), knock (v.), knocked, knocking, knot, know, knowed, knowing.

Lace (n.), lace (v.), laced, lacing, lady, laid, lamb, lamp, lap, lard, last, laugh, Laura, lay, lazy, leaf, lean, leaning, learn, leave, leaves, left, leg, leggings, lemon, lemonade, let, let's, letting, letter, lettuce, library, lick, licked, licking, lid, lie, lift, light (n.), light (v.), light (a.), like (adv.), like (v.), limber, line, lion, lip, listen, listening, little, load, loaf, lock, locked, locket, locking, London, lonesome, long, longer, longest, look, looked, looking, looking-glass, loose, lose, lost, lot, loud, lounge, love, loving, low, Lucile, lunch, Lyle.

Machine, mad, made, magazine, mail (n.), mail (v.), mail-box, mail-carrier, mail-man, make, making, Mamma, man, manage, many, maple-sugar, marble, mar (n.), mark (v.), marked, mash, Master, match, match-box, matter, Maud, may, maybe, McGinty, me, meal, mean (a.), mean (v.), meant, meat, meat-market, medicine, Meekin, meet, melt, melting, mend, mending, "meow," merry-go-round, mess, Methodist, middle, might (n.), might (v.), Mike, Mildred, milk, milk-bottle, milk-man, milk-ticket, mince-pie, mind, mine, minute, Miss, mistake, mistaken, mitten, mix, mixed, mixing, molasses, Monday, money, monkey, "moo," moon, mop (n.), mop (v.), mopping, more, morning, most, Mother, motor-car, mouse, mouse-trap, mouth, mouthful, move, moved, moving, M., Mrs., much, mud, muddy, muffin, mule, mush, music, muss, must, mustn't, my, myself.

"Na," nail, nap, nasty, naughty, near, nearly, neck, neck-tie, need, needle, needn't, neither, nest, never, new, newspaper, nice, Nig, night, night-dress, night-gown, "nightie," nine, no, noise, noisy, No M'am, none, noon, nor, nose, No Sir, not, note, nothing, now, nuisance, number, nut, nut-cracker, nut-pick.

Oatmeal, o'clock, of, off, often, Oh, old, Olive, on (adv.), on (prep.), once, one (n.), one (a.), onion, only, open (a.), open (v.), opened, opening, or, orange, orange-juice, organ, other, "ouch," ought, oughtn't, our, ours, ourselves, out, outdoors, oven, over (adv.), over (prep.), overcoat, own, "ow," oysters.

Page, paid, pail, pain, paint, painting, paint-brush, pair, pan, pancake, panties, pantry, pants, Papa, paper (n.), paper (v.), paper-boy, paper-doll, papered, paragraph, parasol, pare, paring, parlor, part, party, pass, past, pasture, pat, path, patted, pattern, patting, pay, peach, peanut, pear, peas, peek, peek-a-boo, peeking, peel, peeling (n.), peeling (v.), peep-peep, pen, pencil, penny, people, pepper, peppermint, perform, performance, pet, petticoat, petting, phenolax, physis, piano, pick, picked, picking, pickle, picnic, picture, picture-book, pie, piece, pie-crust, pig, pile (n.), pile (v.), pillow, pillow-case, pin (n.), pin (v.), pinning, pinch, pinched, pinching, pin-cushion, pipe, pitcher, place, plain, plate, play, played, play-house, playing, plaything, please, plenty, plum, pocket, pocket-book, poke, poker, policeman, pony, poor, porch, pork-chops, post, postal-card, post-office, pot, potato, potato-masher, pound (n.), pound (v.), pounding, pour, poured, pouring, powder, preach, preacher, preaching, pretty (a.), pretty (adv.), Prince, prunes, pshaw, pudding, puff, pull, pulling, pumpkin, punch, puppy, purse, push (n.), push (v.), pushed, pushing, pussy-cat, put, putting.

"Quack," quarrel, quarreling, queen, quick, quiet, quilt, quit, quite.

Rabbit, rag, ragged, railroad, rain (n.), rain (v.), raining, raisin, rake (n.), rake (v.), raking, Ralph, ran, rascal, rather, rattle (n.), rattle (v.), razor, reach, reached, reaching, read, read (past), reading, ready, real, really, red, remember, reservoir, rest (n.), rest (v.), rested, resting, ribbon, rice, ride (n.), ride (v.), riding, right (a.), right (adv.), ring (n.), ring (v.), ringing, river, road, roast, roast-beef, roasting, rock (n.), rock (v.), rock-a-bye, rocking, rocking-chair,

roll, rolled, rolling, rolling-pin, Roman Meal, rompers, roof, room (n.), room (v.), rooster, rope, rose, rotten, rough, round, row, rub, rubbed, rubber, rubbers, rubbing, rug, run, running, rush.

Sack, saddle, safety-pin, said, sail, sailing, saleratus, salmon, salt, salt-cellar, salty, same, sand, sandy, Santa Claus, sat, Saturday, sauce, saucer, sauer-kraut, sausage, saw (n.), saw (intrans.), saw (trans.), sawing, saying, scalawag, scamp, scatter, scare, scared, scarf, school, school-house, scissors, scold, scolding, scorch, scorched, scrap, scrap-book, scratch (n.), scratch (v.), scratched, scratching, scream, screaming, screen, screen-door, screw (n.), screw (v.), screw-driver, scrub, scrub-brush, scrumptious, seat, secretary, see, seed, seem, seen, sell, send, sent, sermon, seven, sew, sewed, sewing, sewing-machine, shady, shake, shall, shame, sharp, sharpen, shave, shaved, shaving, shaving-brush, shawl, she, shears, sheep, sheet, shelf, shell (n.), shell (v.), shelves, shine, shining, shiny, shirt, shoe, short, shorter, should, shouldn't, shovel (n.), shovel (v.), shoveling, show, showed, "shucks," shuffle, shut (a.), shut (v.), shutting, sick, side, sidewalk, sift, sifter, silk, silly, silver, since, sing, single, singing, sink, sir, Sissy, sister, sit, sitting, six, "skiddoo," skin, skinny, skip, skipped, skirt, sky, slam, slamming, slap, slapped, slapping, sleep (n.), sleep (v.), sleeper, sleeping, sleepy, sleeve, slept, slice, slide, sliding, slip, slipped, slipper, slippery, slipping, sliver, slow, smart, smell (n.), smell (v.), smelled, smelling, smile, smiling, smoke (n.), smoke (v.), smoked, smoking, smooth, snarls, sneeze (n.), sneeze (v.), sneezed, sneezing, snore, snored, snoring, snow (n.), snow (v.), snow-ball, snow-bank, snowed, snowing, snow-man, snowy, so (adv.), so (conj.), soak, soaked, soaking, soap, soap-dish, soapy, socks, soda, soda water, soft, soiled, sold, some, somebody, somersault, something, sometimes, some-way, somewhere, song, song-book, soon, sore (n.), sore (a.), sorry, sound, soup, sour, spank, spanked, spanking (n.), spanking (v.), speak, spider, spill, spilling, spilt, spit, spitting, splash, splashing, splatter (n.), splatter (v.), spoil, spoiled, spool, spoon, spoonful, spot, spread (n.), spread (v.), spring, sprinkle, squash, squall, squeal, squealing, squeak, squeeze (n.), squeeze (v.), squeezing, staid, stairs, stamp, stand, standing, star, start, starved, station, stay, staying, steal, steam, stem, step (n.), step (v.), stepped, stepping, stick (n.), stick (v.), sticker, stick-pin, sticky, still (a.), still (adv.), stir, stirred, stirring, stocking, stocking-cap, stomach, stone, stood, stoop, stop, stopped, stopping, store, storeroom, storm, stormy, story, story-book, stove, stove-pipe, straight, strainer, strap, strawberry, street, street-car, string, strip, strong, stuck, study, studying, stuff, such, suck, sucked, sucking, sugar, "sugar," sugar-bowl, sugar-can, suit, suit-case, summer, sun, Sunday, Sunday School, sunny, sunshine, sunshiny, supper, supporters, suppose, supposing, sure, surprise, suspenders, swallow, swallowed, sweater, sweep, sweeping, sweet, sweetheart, swell, swept, swing (n.), swing (v.), swing-board, swing-rope, swinging, syrup.

Table, table-cloth, tail, take, taken, taking, talk, talking, tangle, tangled, tapioca, tassel, taste (n.), taste (v.), tea, tea-ball, teach, tea-kettle, tea-party, tea-pot, tear, "teared," tears, tease, teased, teasing, teaspoon, Teddy-bear, "teensy-weensy," Teeny, teeter-totter, teeth, telephone (n.), telephone (v.), tell, telling, ten, tennis, tennis-racket, than, thank, Thanksgiving, that (pron.), that (a.), the, them, then, there, these (pron.), these (a.), they, thick, thimble, thin, things, think, thinking, thirsty, thirteen, thirty, this (pron.), this (a.), Thompson, those, though, thought, thread (n.), thread (v.), three, throat, through (adv.), through (prep.), throw, throwing, throw up, thumb, Thursday, ticket, tickle, tickling, tick-tock, tie (n.), tie (v.), tied, tieing, tight, tights, till, time, tincup, tiny, tip, tipping, Tipps, tired,

to, toast (n.), toast (v.), toaster, toasting, today, toe, toe-nail, together, toilet, told, tomatoes, tomorrow, tongue, tonight, too, took, tooth, tooth-brush, tooth-pick, "too too car," top, torn, touch, touching, tough, towel, town, toy, track, train, treat, tree, trick, trouble, trunk, truly, tub, Tuesday, tumble (n.), tumble (v.), tumbled, tumbler, turkey, "Turkey-day," turn, turned, turning, "tweet," twelve, twenty, twist, twisting, two, typewriter.

Umbrella, unbutton, uncle, Uncle Sam, uncover, under, under-clothes, underskirt, understand, underwear, undo, undress, unionsuit, University, unlock, unpin, untangle, untie, unwind, up, uphill, upstairs, us, use, "usen't," using.

Vaccinate, varnish (n.), varnish (v.), varnishing, vase, vaseline, veil, velvet, verse, very, vest, vine, vinegar, visit, visiting.

Wagon, waist, wait, waited, waiting, wake, "waked up," waking, walk (n.), walk (v.), walked, walking, wall, want, wanted, warm, warmer, was, wash, wash-basin, wash-board, washed, washing (n.), washing (v.), wash-rag, wasn't, watch (n.), watch (v.), watching, water, wave, waved, waving, way, we, wear, wearing, Wednesday, "wee wee," weeds, week, weigh, welcome, well (a.), well (inter.), went, wet (a.), wet (v.), what, wheel (n.), wheel (v.), wheeling, when, where, which, while, whip (n.), whip (v.), whipping (n.), whipping (v.), whiskers, whisper, whistle, whistling, white, who, whoa, whole, whooping cough, why, wide, will, wind (n.), wind (v.), window, windy, wine, wings, winter, wipe, wiped, wiping, wire, wish, wishing, with, without, wolf, woman, wonder, won't, wood, woolly, wood-pile, woods, word, work (n.), work (v.), worked, working, worm, worn, worst, would, wouldn't, "wow," wrap, wreck, wring, wringing, wrist, write, writing, wrong, wrote.

Yard, years, yeast, yell, yellow, yes, yes M'am, yesterday, yet, you, your, yours, yourself.

Zinc.

THE SUB-CONSCIOUS VOCABULARY

Appetite, April-Fool, asparagus, Aunt Alta.

Banister, Bertha, Betty, blackberries, blackboard, blade, Bob-white, bonfire, brake, Brickner, bun, "buggy," "bully."

Calendar, camphor, cantaloupe, Cattie, carnation, Caroline, castor-oil, cement-walk, checkers, cherries, Clint, concert, court-house, cousin, cricket, cucumber, currants.

Davenport, delicious, Donald, Dutchman, drug-store.

Edgar, elastic, Estes Park, Esther, Etta, Eva.

Fan, fire-cracker, fish-line, fish-pole, flat, fountain, fox, "foxy," fractious.

Gasoline-can, gasoline-stove, Geneva, "git-out," Golda, grape-juice, grunt (n.), grunt (v.).

Hail, harness, Harold, Harriet, hatchet, hay-mow, Hazel, Henry, hiccough, Hines, "hobo," horrid, horse-radish, Howard, howl, hurrah. Inez, interesting, Irwin.

Jones.

Kastor.

Ladder, lawn, lawn-mower, left (adv.), Leland, Leta, Linda, lines (reins), lunch.

Manny, maple-syrup, marmalade, McNutt, meadow-lark, Minnie, Miss Lamb, mountain, mosquito, mow (v.), mud-puddle, mustard.

Nibble (n.), nibble (v.), nostril.

Oil-can, oil-cloth, olive-oil, olives, opera-house.

Pansies, paste, paste-board, phonograph, piano-stool, pineapple, plant

(v.), planted, planting, popcorn, pump (n.), pump (v.), pumped, pumping, punish, purr, purring, practice, practicing, putty.

Question.

Raspberries, restaurant, Robinette, Rubie.

Salad, salts, scythe, sherbet, shoe-string, shoot, shoot-gun, sieve, skates, skip (v.), Skip, smoky, snake, snap (n.), spade, spectacles, squirrel, steady, stomach-ache, stretch, stumble, stumbled, sweet-peas, switch (n.), syringe.

Tank, Taylor, tennis-ball, tennis-court, terrible, thunder, tin-can, toad, tomato-soup, trot, trotting, trout, turnips, turpentine.

Upset (n.), upset (v.).

Wade, water-melon, wheelbarrow, whetstone.

"Zabo."

THE CONVERSATION OF G FOR ONE ENTIRE DAY

7:05 A. M. (Talking to her father.) Six o'clock isn't it(2)* Can't I dress?(2) Ain't it warm? Believe it's going to be another windy day. Are you all dressed? Got your shoes and stockings all on? Papa, I'm awful hungry. I slept pretty good. I want somebody to dress me. Can I help you write? Oh land, you'll wake Mamma up. (To her aunt.) Oh, Aunt Laura, did Uncle Ralph run away? Where did he go? (To her father again.) Papa, I wonder if my blister's going to stay or not. Where's my other clothes?(1) There's one o'my stockings. There's a prayer-book, prayer-book.(4) Did you fix my shoe? Ain't it got anything bad in it any more? Here's something. It's big paper. Yes. This'n isn't unbuttoned. Here, I am going to stand on this. There's all my clothes. Which way does it go?(2) Here's a penny in my union-suit. (Hums.) This little nuisance goes into my sleeve.(2) Oh, Papa, this other way gets mixed up. You don't have to button this.(1) I bet I can tie this.(1) Here's your pin. Here, I need that in my waist. You unpin it. This has to be out some so I can tie it. Now they're all out so I can tie. I'll get this on. Which way does this go on? No, where's this one? Now, where's the other one? Nobody can see on this side, can they? Button it. Oh, show me how this goes.(1) Oh, I know. Did you ever? Oh, Papa, I don't know how this goes.(1) I can't get this on 'cause it goes up to my neck. I don't think this is too tight. Where's my bloomers? Oh, I'm going to put my bloomers on.(3) Papa, I can't get my bloomers on. Papa, you straighten 'em out. See, I can get it in the right one. Now, see, can't get it in the right one again. Which way? Which way, then? Papa, that sore on my heel hurts when I walk on my bare foot. Oh, ha, I pretty near fell down. I can get my garters in myself. See? Now where's this other one that belongs to this one?(1) I don't either. I guess we'll have to. Is it time to get up? Mamma won't get up when it's time to get up. Mamma, you get up. All right. Oh, my bump hurts.(2) Can you do any trick like this? I am going to get my shoes first. Yes. Papa left this piece of garter outside the room. Why do you stay in bed so long, Mamma? Can you do that?(1) Yes, you can. You can too, Mamma.(2) Papa, that wakes poor Aunt Laura up. You don't want to wake her up, do you? He did that, that way. I see something (1) on your nose. Papa, did you button this one up when you fixed it? Who buttoned this up? Did you fix this one? I got to.(3) I got to dress. Where's my dress? I can't find my dress when the covers are all over it. Dear Evelina

* The numbers in parentheses following sentences indicate number of times sentence was repeated.

— (sings). Mamma, can you sing "Dear Evelina"? Aunt Laura can sing it. Dear Evelina (singing), wherever she goes, I won't spank her.(2) Mamma, bet ten cents I'll beat you. Mamma, I want to go with you. Papa, I'll bet you we'll have to go and feed the old hen.(1) See this seam? It goes clear up to my neck. Don't see my dress. Oh, it goes on the arm, see? My dress is wrongside out. Have to get the sleeves rightside out. (Goes to the bathroom to wash.) Oh, this water is so cold.(1) Mamma, I'm so dirty I have to wash. Mamma's got a dirty egg. (Goes to the kitchen, gets a book, reads incoherently, saying about fifty words.) Papa, isn't that a nice story? (Reads again.) I don't know any more stories in this book. I don't. I don't either. Mamma, I don't know any more stories in this book. It's too late for the Camera to come now. Mamma, Papa said you'd fix my belt button. Mamma won't fix my belt (button) when she's washing dirty eggs. Uncle Ralph left his keys. 'Tisn't any fun to leave keys, is it? I'll fix my belt this way if you don't fix it. Mamma, can I go with you? (1) Mamma, Papa's washing his face in that old, dirty water. Now I'm going down where you are.(1) Papa, I've been down where Mamma was. Used to be another button, but there isn't—it's off. It's lost. Mamma, you button my belt in the right place; in the back where it ought to be buttoned. This room is light enough, Mamma.(1) Here I am. Aunt Laura said I could have this. I'm hungry. Then I want an orange.(3) I'll go in and get one. Oh, I want to "chair." Mamma. I want to "chair." My orange isn't on the floor now. is it? Patty-cake. Patty-cake — —. This button right here isn't buttoned. Papa, we don't put pencils in our mouths. Mamma don't put pencils in her mouth. Do you, Mamma? You peel my orange. You, then. These are such good oranges, aren't they, Mamma? Uh, huh, these little ones. Thank you. Aunt Laura gets it mixed up ('Thank you' and 'You're welcome'). Oh, who done that? (2) Did you, Mamma? I mean who broke this piece of orange? Papa, do you want a little piece while you're working? Mamma, do you want some? Mamma, one day a boy came and says, "You want a Post"? and then I says, "No, we got a Post." When we move the piano into the other room, — — I mean in there—not in that room and the secce—secce—. Which way do we say it? Secretary. And then when Uncle Arthur came and they all moved it out. And then one day my box was here and the dishes were there and Lyle was here and we had some little dishes. Mamma, bet ten cents I beat you. My, I wonder if you'll spill the grease on the floor again. Will you? (Sings.) Mamma, I've got to have this on.

8:00 A. M. (Helping to set the table.) These are mine. Papa can't have these. These are mine, Mamma. Don't you know where to put my things?(4) Oh, sugar, don't you know where to put my plate, then? Now looky where you put it. I'll take it over to the table. shall I?(1) Mamma, you left that oven dirty. Do you want it dirty? (2) This old bloomin'(3) doesn't go off. Mamma, hang this up. Papa, Mamma said we could begin to eat now. (Sings.) Don't want my feet in my muddy shoes, do I? Mamma, you fix me something. There isn't any here. I want some milk.(3) Please, may I? Isn't very much milk. I'm eating dinner without my bib on.(1) Don't want that big pancake to eat or I'll get my mouth all full. Now it's all right. What's that right there? It's syrup, isn't it? Some the milk went up to my forehead.(1) I don't want any more dinner—I don't want any more dinner. (Sees her playmate, Lyle, coming.) I'll get my playthings. Mamma, I'll get my playthings and then I'll have them ready when Lyle comes. I got three valentines, Lyle. Did you? Lyle, you and I haven't played together for a

long time. Lyle we haven't got any good apples. You used to have some bananas. Yes. Lyle says he's got a little desk telephone over to his house. Lyle, I'll put your things in on the bed. Mamma, I can't find all my playthings. You find them.(2) Mamma, I see a hole in your dress.(1) (Gets nails and hammers.) Lyle, I'll pound first. We'll each pound with this one, won't we? Haven't you got another box? - Lyle, you and me'll fix this old box, won't we? Mamma, you said I could pound into the edges. Is this the edges? Gummeshums, gummeshums! You say that, Lyle. Is this the edge? Here are some nails for you. You and I have a tack, haven't we, Lyle? Papa — Lyle, you have only one tack and I have two tacks. Where? This isn't a tack. It's a nail. We both got tacks, haven't we? Lyle and I have tacks. Did you know I fixed my little hammer? That's a funny way to fix a hammer. Have you got it now? It's lost, isn't it? Is this the edge? Lyle, I bet ten cents I beat you getting my nail in. Looky at my nail. See what I did. Mamma, here's one o' your hairpins. I am going to pound hard.(1) I ain't going to pound hard. I am going to pound slow. Some time I pounded in the edge, didn't I? Here's a tack. It's a tack then. Is it a nail? Lyle, don't, 'cause my box will go over if you don't pound low. Mine will be in pretty soon. Lyle, don't pound till I get this started. People don't pound till little girls get started, do they? All right. Lyle, here are your nails, aren't they? Here's my nails. This one is crooked. This one is straight. Papa gave this little box to me. It's mine. Is this the edge, then? Wow! Is this the edge? Lyle, don't pound yet. Bow wow! Here it is. Here it is. Looky what I can do. Lyle gave me all kinds o' nails. Lyle you can have them. Don't you want any more nails? Don't you want to pound any more? That isn't the edge. I can get these in. See what I can do. Dobawshucks! Where did my nail go? See what I can do. I got one nail out. Lyle, you just watch me get this nail out. He gave it to me. I played peaches in that box one day. I played animals was peaches, and then I went bump. Lyle, you tell me a story. What? Jerry-ann? Jimmy — — Jerry. You look under here and see the nails. We have Fairy soap in the bathroom. You come see. See? Looky what I can do. I'll get Lyle my doll buggy. Lyle, play I was the mamma to get dinner and you was the papa to perform. That will be nice. I'll get my company something. I got lots o' valentines. Who sent 'em to you? Did doggie give 'em to you? I got lots o' playthings. Here's my little chain — that's broken. Mamma, I want to "chair." Lyle, excuse me. I said, "Lyle, excuse me." Mamma, don't let Lyle have them till I get through. I ain't through yet. Can you do this way? Lyle, see what I can do. What can it (the Teddy-bear) do then? I have to pound nails all the time, don't I? Lyle made the bear up on a tree. Can you do that? I want one o' those straps. What did you say? That will hurt poor Boy Blue when you put this strap in it. It will Dollie too. I am going to pull this strap just as tight as I can. That will hurt poor Dollie. But Dollie has got a buckle on both her ends. Oh, you nuisance. Mamma, you haven't mended Teddy for a long, long while. Can you do that, Lyle? Here's the edge, Lyle. You put your finger away, else I'll pound on it. Then I'll pound here. I got this crooked nail. Let's drive Bessie. Lyle and I are going to play horsie. Lyle, what are you doing? I'm going to have mine ready. Get-up, Bessie. Now, you big, bad Bessie. You do that to your Bessie. I'm going to hurt Bessie. Lyle, this box is all broke. See, I had to take the other edge off. How do we play that, Lyle? I want some dollies. All right. This is my box. I am going to play Christmas presents and Santa Claus. I'll be away, Lyle, and then I'll send you some Christmas

presents. Last Christmas a real Santa Claus gave me my real doll buggy. Your automobile? What did he give you? That's a lot for a little Lyle. Lyle, you watch my buggy, will you?

9:00 A. M. (Plays telephone with Lyle.) Hello. Fine. How are you? I had some dollies once, but I haven't now. But I have some nails at our house — — and we had some bananas — — but they're all used up — — and apples, but the apples are all gone 'cause we made dirty, old apple pie. Hello. Well, that's all, but what's your number? Was it changed? Good-bye.

(Still with Lyle.) Lyle, come in and see my Aunt Laura. There's her comb and there's her brush. She is tired; she wants to sleep. Come on out here. I don't want you to rock on that chair. I want a pencil and paper. I made a dog. That's a rabbit. It's a man. This isn't going to be a dog. It's going to be a man. Isn't it? There's his mouth and there are his eyes. That's a man. See what I made. Lyle, you write on your own piece. I'll write some here myself. What's your number? Now see what you did. What is it? All right. Yes, it is a sign. I am going to have a sign. Looky what I did then. That is going to be a sign, isn't it? I'll write on your paper. Looky what I did. Lyle's going home. That isn't a sign. I know how to make rabbits, don't I? Good-bye, Lyle. I am glad Lyle has been over here. I want to go out and feed my little baby chickens, Mamma. I want to feed them again. I'll break it. I'll wipe it and see if I did. Are you going to let the hen out? Take hold my hand. I am starved to death. I want an orange. I am hungry. I don't like bread without butter. We don't have bread after we've had orange, Mamma. I can find a big piece o' bread. I want something on this piece o' bread when it's good.(1) I want crackers and bread and milk. Who's been drinking it? I want to pound nails. I am going to pound nails to-day. Where's my pencil? I want some paper, too. (She was still for several minutes at a time here as she played.) Let's go to Mrs. Ferguson's so Aunt Laura can sleep. The other Mrs. Ferguson has cookies. Don't you want this window down so it won't be cold? (1) What are you going to do, Mamma? Let's go over to Mrs. Ferguson's, Mamma.(2)

10:00 A. M. (Talking to her aunt and her mother.) Oh, they're (the chickens) just fine. No, there ain't any dead. Ah, I haven't been crying. I ate cracker and milk and bread. That's what's the matter with my face. Let's go to Mrs. Ferguson. You said you was bound to go to Mrs. Ferguson's. All right. I want to sit in this box. Oh, Aunt Laura, Mamma said to be still. Ah, I want to sit right in this box. (2) I am going to put it on the wrong foot, I am. Who was that? I want to sit up there. I won't put my other shoe on for two years.(1) There I went. What did I do? Oh, it's hot. You put some water in my eyes.(2) I want this water. Did your incubator come? When did it come? Now somebody has come. (To her father just coming in.) Looky what I done, Papa, is this mine? Papa brought me something, Aunt Laura. I'll show you now what I got. Mamma, I'm going to put my shoes on. (Hums.) Mamma, pretty soon I'll be down there to help you. Mamma, how does this — —? Now I want my other (shoe). Oh, here it is. Mamma let me up on your lap. Mamma, you're going. There isn't another towel out so I'm not going to wipe the cup. I'm going to let Mamma wipe 'em. Oh, my old, dirty, old nose.(1). Keeps running all the time, doesn't it? (3) I don't like you old rocking chair.(1) Now see what you went and done, you old rocking chair. Papa, I'll show you how Lyle and me played Bessie.(1) Now go in there. Get-up, Bessie. That way, Papa, Lyle and me played Bessie.

Look. (At the telephone.) Mamma, you must be Uncle Arthur. Hello, Uncle Arthur. That isn't the way. Hello. That isn't the way. I ain't going to talk to you.(3) I ain't going to talk to you any day.(3) 'Cause you don't talk right. I ain't going to telephone to you any day, 'cause you don't talk right. That ain't the way to talk, is it, Papa? I ain't going to play with you any day. All right. Where is the milkman? Mamma, here it is. I'll put it (milk bottle) out. Mamma, I want to wait out here till he comes. I didn't want you to shut me up 'cause I wasn't in. Mamma, I want to talk to you. (Telephones.) Hello. How are you? I got nine little chickens. Isn't that nice? Yes. Mamma, is taking a nap, but I'm going to school to teach a class. Where are you? Aren't you in Webster City? How's Grandpa and Grandma? Uh, huh. Yes. All right. I have — I have (2) — —. Uh, huh. Good-bye. (To her father.) Mamma was going to write me down some words. You don't let Mamma write me down some words. Mamma wants to, don't you, Mamma? (1) Now see what you went and done.(2) It's good — — it's good anyway and we don't put good paper in the coal bucket. Do we? (2) We don't have to pick them up and put them in the coal bucket, do we, 'cause they're good? (Hums.) (Goes into bedroom.) Mamma, come on then. Come on then, Mamma. Mamma do you want the light on while we're in here? (2) Mamma, do you want the light on? Mamma, I was going to help you. I wanted to help you get my bed in all at once. I'll put this (a pin) in my dress. Now — — uh,huh. I can't unpin it. I want to roll on your bed.(1) I'll jump.(1) Mamma, don't make this bed. Mamma, I want to help make that bed first. That was too big a ball. I couldn't put it in the laundry-bag.(1) I want to play with Edwin.(1) My bloomers are down. I can get my bloomers up. What did you say? Mamma, you'll have the bed made when I get back.(1) I can't put all the shirt in the laundry bag. All right. Whoa, there. I'm putting it in the paper anyway.(1) I'll hold the dust-pan.(3) No, I didn't. This is Uncle Ralph's prayer book. Yes. He prayers with it. Down town. I saw it down town. Uncle Ralph.(2) That went high, didn't it, Papa? (1) Went on the piano that time, didn't it? Ha, it went up and hit your head, didn't it, Papa? It went up and hit the ceiling that time, didn't it, Papa? Didn't it? Aunt Laura, you watch this. It hit the light that time. You do this.(1) I want it.(1) There went the card. There they went. They went up and hit the ceiling. It's going to go up and hit the ceiling, pretty near. Pret' near that time, didn't it, Mamma? Wonder when Uncle Ralph is going to come. It went right in your rocking chair, didn't it? It went right behind the stove. That's a funny trick. It's going to go up and hit the ceiling, pret' near. Here it goes up to hit the ceiling. It's clean anyway. That piano stool? Isn't it? Can I — — may I clean it then? This is the cloth. Is the stool clean? Mamma, I won't fall if you don't hold me. Rock, rock, rock (hums). I can hold little doggies though. Papa, one day I and Mamma went down town and we saw a little bit of a dog and he was white-headed. And we got past and looked at him and he — and he — and he was white-headed and he belonged to a man and he — and he — —. That's all. Mamma, I told Papa a story. Now I'll tell you one.

11:00 A. M. Once there was a little girl named Goldilocks and she went walking one day, went walking in the woods one day. And she came to the funniest little house and it was the Bears' house and there wasn't anybody home — — and she knocked and knocked and knocked and then the bears came and growled — — and, no — —. What did they say? What do bears say? Oh, yes, and they didn't

come then. And she sat down in a great big chair and she took the great big spoon and tasted the soup and it was too hot. And then she sat in a little chair just like this and sat the bottom all out—and she took the little spoon and tasted this bowl o' soup and it was just right. And it was just right and so she ate it all up. And she went upstairs and lied—no, lay down in Papa Bear's bed and it was too high at the head — — and — and she lied — — she lay in Mamma's Bear's bed and it was too high at the foot and — — and then Baby Bear's bed—it was just right—and she slept and slept. And the wolf came and said, Good morning, Red Riding Hood—and the wolf went ahead and Riding Hood went and took the basket with bread and butter and jam and put it on the table — — and — and then the bears — — — ah, that's all. I want some writing some time to-day. Aunt Laura, you get me some writing. What can I do? I want some writing some time. I want some — —. Mamma's going to write me down some words. Mamma, write me some words. Papa, I'm writing a letter — pretty soon I'm going to put it in the mail box. Then pretty soon the mail man will come and get it. Aunt Laura, what are you going to do? Who are you going to write to? She's my Grandma. Oh, I made a man with feet as big as yours, Papa. Oh, I can understand baby-talk. I can. Four of us — — five of us are writing. You're one, Papa's two, Aunt Laura's five — — Aunt Laura's three, and I'm four. Uh, huh. I want to count over. You're one, Papa's two, Aunt Laura's three (1), four of us are writing. What time does Uncle Ralph come home? Isn't this seven o'clock at night? I'm hungry. (1) You said you's going to get dinner. You're two, Papa's one, Aunt Laura's three, and I'm four. Mamma, is the oven hot? (2) Don't want the door — —. Papa, I'm going to put your book away — — bounce—bounce (hums). Aunt Laura, who's is that? Isn't it Papa's? Is it Uncle Ralph's? Where's the ink? Isn't this book Papa's? Isn't this book Papa's any time? Now I'll put this up. I won't rock this when I'm on it. I won't bump the piano stool when I'm on it. (1) Why wouldn't you buy me a bigger chair than this one? Now look — — it's little and I want a bigger one. Lyle can take this home and keep it. I don't want any rocking chair any time. 'Cause it makes me fall and break the plaster. So I don't want my rocking chair any more. I'm going to send it to Lyle. Looky how big I am. I'm twelve years old. Play I'm twelve years old. (2) Aunt Laura, I'm twelve years old — — so I can get my sleeves down. When I'm three years old I can't get my sleeves down, but I'm twelve years old so I can get my sleeves down. I'm big for this rocking chair. Uh, huh, Aunt Laura, he'll take it if I leave it there. It's warm outdoors. I want to do that some time, don't I? I want something to eat, Mamma. (3) Papa's one, you're two, Aunt Laura's three, and I'm four. Oh, is that your nice new pencil? That one's Papa's nice new pencil. Isn't it, Papa? Can't I help you any day? I want to do something some time to-day. Mamma; the oven's hot. (1) So I want something to eat. (1) When I was little I spilled milk and I had to wipe it all up. I'm twelve years old now. It's the egg-beater. Papa, I would like some salts, too. 'Cause I'm sick. Bet you I'm sick. We take salts when we're sick. Papa, are you sick? Then what'll you do? And eat salts? I said "drink salts." It was me — — it was I. Give me some. (4) I want — — I want a drink out o' that glass. What are you going to do now? I want a drink out o' that glass. (1) I can't hang it on the cellar door. Mamma puts it on the floor sometimes. Can I sail? (1) I'd rather wear my slippers. I'll put my slippers on. I'll go over to Mamma. I won't tell you — when I went in there to get one more egg. I fell

down when I went to get one more egg and hurt my knee. I'm twelve years old — — I don't cry. Uh, huh. Not any time. Well, then, why do you say "cry" again?(2) I ain't. (To the milkman.) Fine. Fine and dandy. That dollar's for you. I'm fine and dandy. (Coming in again.) I'm hungry. Dinner's ready. I want something to eat right away.(2) Do you? I do. Are you?

12:00 M. (At the table.) I want to be closer. All right. I be'd still long. I wasn't telling you that. I was telling Mamma. Mamma, I be'd still a long time. Mamma, what is "be'd"? What is "be'd"? Oh, I was still a long time. I was talking to Papa. No, I was.(5) I was talking to Papa.(3) How do we make high chairs, Mamma?(1) Aunt Laura, where's my — — here's my fork. Give me my knife and spoon, and fork and knife. Am I dressed?(3) Will you put that down, Papa? Dinner is served, Mamma. I want some potatoes. Papa can have that side of the table. I want closer. Mamma, what shall Papa do? I want some potatoes. Which town?(1) Oh, Boulder. Here I am. Give me my — — I want my spoon,— to get it off. Put it in my dish. Let me butter mine. Which way? I'll mix 'em. Mamma, I got cracker in my egg. You got crackers in your egg, Aunt Laura? What you got in your egg? I want some gem, too, to eat in my fingers. I mean to eat in my mouth. I want some more crackers in my egg. I said my egg wasn't very good with crackers. My egg isn't very good. I want some more jelly. I don't want another egg. I want another gem, though. I want some jelly on mine. I want some milk.(2) We ate a lot, didn't we? I bet ten cents I didn't get my bib dirty. Where is it? Egg? Uh, huh. (Leaves table.) I want to see if I can do that. Don't. 'Tisn't cold. 'Tisn't solid. 'Tisn't soft. It's cold. Uncle Ralph had it one day.(1) That little Hay boy said I lost that one day. Then I want to go out. That won't be sad. Ting-a-ling — —(25). We're both in here. Aren't we?(1) Can you do that, Aunt Laura?(1) That kind o' trick? Papa, could you fall off the step and hurt you? I want to see if I can do that kind o' trick out here again. Didn't hurt that time. Ting-a-ling—(25). Look at what my Mr. Stocking done. Ting-a-ling — —(25). That's the train. What's that outdoors — out with Lyle? Where are they, Mamma? Mamma, Mamma.(4). I want to play — — —. You want me to wheel out on the porch so I won't make so much noise, don't you, Papa? Papa wants me to wheel out on the porch so I won't make so much noise. I'll show you how you want my little baby buggy, Mamma. Papa, I'll show you how you want my little baby buggy when I wheel it in the kitchen. Papa, you want this in here and this stick in here. I'll fix it so it won't make so much noise when I wheel it in the kitchen. I want a hammer. I'll show Papa how he wants my buggy fixed to-day so it won't make so much noise. Papa, how do you want my buggy fixed?(3) So it won't make so much noise?(1) This way, Papa? Mamma, where are you going?(3) Where's Papa going? Where are Mamma and Gladys? Aunt Laura, I am going to be dressed up. Uh, huh. Here's one o' my hairpins and you can have it. No, there, I want one.

1:00 P. M. (Out of doors.) I want to go a little ways, Papa. Can I? He says I can't go. I want to go some time. Can't I go neither to Webb's? Aren't you going to the University? Aren't you going to the library? Now he said, "No." You and I are going to stay home, aren't we, Mamma? Mamma, 'ess run round the house. Run round this way. I want you to run. I'm goin' to run and I want you to run with me. I don't see it. In here you left the water last night. In here you spilled some last night. Mamma isn't going any place, 'cause she isn't going to do anything, are you, Mamma? I'll watch,

Mamma. I'm going to watch.(2) Oh, I see the mail man. There he comes. Yes. it is. Hello. You and I like to be out, don't we, Papa? Where are you going? I am fixing my rubbers. He (a neighbor child) wants to tell me something. Can I put my hood and coat on and play? Can I, Papa? Lyle, I can't — — I can't come and play. Can I fix my rubbers outdoors, Papa? Harold, Papa said I could fix my rubbers, but I couldn't go out and play. Hello, what are you going to do? Our grass? Whose grass, then? Oh, you, Jack (the dog). Jack wants to kiss me. Are you going to trim Lyle's grass? You going to trim your own grass, then? Once I caught Jack in my arms—in my hands. No, you won't. This is something that sprinkles out—to sprinkle with like that. With this off and something I don't know on it. We do that to the grass when we sprinkle. The coal man is giving us some coal. Harold, look where the water went. It went on the sidewalk. It was in there. Yes, it was. Aunt Laura, good-bye. Papa left his knife out here. Here's your knife. I'm going to put my slipper on myself. Look, this is a little stick. It used to be this way, but it isn't now. Look, that (the wagon) is going to go out, Mamma. Those horses are going out. The coal man gave us some coal. There's somebody's auto down there on Seventh Street. That where the auto is, is Marine Street. Ruley's live on Marine Street. We live 483 Marine Street. I can't. Don't eat it yet. All right. I'll give it to you, Jack. He brings it back for me to throw it again. It didn't go in the street. Jack, good catch.

2:00 P. M. (Still out of doors with her mother.) Jack stepped on my toe.(1) Now, Jack, I'll throw it this time. Here, Jack. He is going to get it now. Why don't you throw this? I am going to see if he'll go and get it if I throw it. I'll make him go. Jack can run. I've got a blister on my heel. I want to throw it. You were going to let me. You can't eat it yet. I can't throw it far when I'm sitting on the steps. That woman is tired out when she's walking and so she's riding in something I don't know. (A woman passed in a wheel-chair.) Can you do that trick? We got shoes on, haven't we, so our feet won't get cold. I'm going to bring my bathroom box to put my rubbers in. If you don't go away, why, I'll hit you. Lyle, you mustn't climb that tree 'cause Mamma said you mustn't. Lyle, I'm going to have a place for my rubbers. Can you do this, Lyle, Harold? Watch me do a somersault on this grass. I'll do another somersault. I'm going to another corner. Mamma, here's a dead chicken. I'll take it. He doesn't want it. No, it won't. Come here, Jackie. Maybe Jack will eat them. I'm throwing the can so Jack can take it when I throw it. Now you let me take that. Mamma, you come and see the old hen and chickens. They are eating dirt. (Swinging.) I pretty near touched this. The dirt came up into my eyes and it hurt my eyes, too. That's the way I swing. Isn't it, Mamma? Her Mamma already mended that little girl's shoes, but my slippers aren't mended. Poor Jackie, I kissed him. He wants to eat some of this dirty eggshell and other stuff. Sometime to-day I 'spect I'll step—step in a can of water again. All right. I'll wait for you. I'll look after the old hen. I want to carry the glass of chick-feed. Let me pour the water.(1) This looks like cream, doesn't it? You said you would stay with me. I want to play with this glass.(1) I am a cook to bake. Papa went to the University. He wanted to read. He went to the library. He went to the same one Papa goes to. Books and magazines are in the library. Magazines with pictures in. Didn't you want me to take this little spoon? This big one, you mean? I am just digging in the dirt and playing with the glass.

That's ours, honey. Mamma, that little boy wants to play with our spoon. I don't know what they said — — I'm busy. Jack, I don't want that. I can do without that. Mamma, play you was Papa and I was Mamma. Mamma, you come with me and get a drink this time. Lyle is trying to get Harold to say "Alabam." He'll let you see his book, Mamma. I am going to bring my little rocking-chair out here, too, Mamma. I didn't want to go with Aunt Ollie.(1) Ralph won't hurt my little red rocking-chair. You can sit in it if you want to, Ralph. Ralph had it once to-day. Look what a sewer I dug. We have to be satisfied with "play" ten cents. (Talking to the children playing store.) I'll give you some more ten cents. What? I got a rubber, Mamma. I tore my sample. This is my sample. I ain't swinging too high, am I, Mamma? Pretty soon it will bust — this swing. Mamma said I couldn't play. Lyle let's do this. Then I played with dirt and rocks. I have a little doll-buggy and two purses and a real pocketbook. I can't handle that big broom. Mamma, don't take the spoon and glass. Wait a minute till I get a drink. What is the new style? We do, don't we? I'll go in my house. I'll show you the new style. That's the new style.(1) I want to climb a tree. Mamma, I'll show you what I can do.(1) You turn your head over and see what I can do. You and I have a scrap, Lyle. Let's go and swing. I want to swing.

3:00 P. M. (Goes into the house with her mother.) Give me a piece o' paper. I have to get my box. I got it. Where's my orange? See this water. See how the dirt comes off my hands. Shall I break this orange? I have so many fingers—an' two thumbs. Three, four, nine fingers — — I got. Here's my ear—here's my other one. Here's my eye—here's my other one. There's my forehead. Let's play "Knock at the door, Peek in, Lift up the latch, Walk in." You show me how to knock at the door. Now you do it again. I'd like some more orange.(1) Do you want some more? I didn't eat any. Which one do you mean? I couldn't get it. Is it my clean dress? You unbutton it, please. Oh, Mamma, this is such hard work. Here's my wrist—this is my arm—here's my shoulder—here's my shoulder. And here's my elbow. I hurt my knee. I am putting my clean dress on. I'll show you how it isn't right. This is going to be a funny way to put a dress on. There's the wrong sleeve. Now you button me. Mamma, I'll show you what's the new style. Turn your cap wrongside out. This is old style. That's the way I used to have it, old style. Mamma, let's "hide and go seek." You do just that way. Lyle does it. Somebody else does it, too. Mildred does it. Mamma, let's play I was eight. Let's "hide and seek." Tell me stories—tell me about Goldilocks. Now tell me about three little kittens.(3) What was the names of two little kittens? One day they used to have names. Mamma, I'm not up. I'll fall and break my neck. I'll bite you and then it won't hurt you. I want a drink.(3) I'll help myself. Now I can't see you. I had breakfast. I want something if it isn't dinner. That bite hurt me. It did—right here. I want to see you write. Charlotte was a baby. She was a little tiny baby—she was in a basket and she squealed. And they were going down town and they had a buggy and Charlotte's Mamma put Charlotte in the buggy. Mamma, we don't comb hair with pencils, but with this comb. I'll put it in my hair. Mrs. Bartato has lots o' things at her house. Some little birdies in the house and they sing songs like I do. They live over there in a cage. I like to have birdies sing. I do. Don't. Let's play we were two little kittens. That's my mouse. Now let's begin to quarrel and fight. I will have that mouse. Now play the old woman came and she swept us right out of the room. We'll

be good little kittens. She swept us in again and now we're by the stove. Let's do the quarreling over. I'll have that mouse. It's so cold and stormy—meow—meow—meow. Let's do the quarreling over and over. I'll have that mouse. Where is the mouse then? I don't see it. Mamma, we went to the picture show one day in the University, we did. And once we went out to the farm and there was an incubator. It was to the depot, too. After she puts eggs in the incubator, then what will she put in? I want the pencil. Play you had a big comb and play I had a big comb. Oh, there are snarls in my hair. Where's my dollies? I'll give you two dollies. No, you have Teddy and this one dollie and I'll have this one and I'll come and visit you. How are you this mornng? I'm fine. I got nine chickens. Yes, he's all right, but sometimes he's naughty and he runs away over to Mrs. Daniels.

4:00 P. M. (Her father comes in.) What did you get me, Papa? What did you get Mamma? Let me see if it's peas. (Plays visitor again with her mother.) How are you this morning? No, you are pretty well. I am going right straight home, I am, when you say that way. I won't come and visit you any more. Papa, I want a taste. I'll play with Mamma some more. I want to taste Papa's orange. What is in here? Here are the onion sets. Can't I see the onion sets? I want to see some onion sets sometime to-day. (Goes out of doors with her mother and father.) Papa, are you going to stay out here a little while? Papa says he's going to stay out here a little while.(1) Papa, you'll be lonesome if I go in, won't you? Papa, bet ten cents I can kick you. Bet a dollar I stepped in a can o' water. I want—I'm going to throw this old, dirty, old wire away. I'll bring the swing over there and then you do it. You do it. Can you reach it if you do it? Little chickies can't reach it, can they? That was a funny trick, wasn't it? That was a funny go-down. So this will be a garden. It isn't good any more 'cause it's got lots of rotten apples in it.(1) Mamma, I'm going to go this way.(1) Papa, 'ess make a "bum" fire out here 'cause I want a "bum" fire. Now you watch it. I'm going to twist up, Mamma. You go round here and swing. I don't fall out the swing when I do this. Uh, huh. Doesn't hurt. I'm goin' to swing that way. Is this Christmas? When is it Christmas? You watch me do this. This'll be a good garden here, won't it? Won't this be a good garden, Mamma? Won't it? That's a funny trick, wasn't it? Mamma, that's a funny trick. That was a hard trick. I'm going to work up, Mamma. Mamma, I'll show you how to work up when I'm swinging. I'll try to swing high and then I'll be working up. That wasn't working up. I'll show you a new way to work up when you're sitting down. I'll wait for you, Mamma.(3) I'm coming right after you, Mamma, so you better get out of the way. This is a good garden, Mamma.(1) I kicked your apron. I can't kick you now.(2) I'll get my slipper in this can o' water now. Papa, is it "before" or "ber-fore"?(3) Mamma, I'll swing right into you now if you come back here, 'cause I can't stop, so you better keep away. I'll do another perform.(1) I'll do another performance, so I will.(2) Oh, that was a funny splash on my stocking. Got some on my dress, too. I'll throw it away. Does Mamma want some (water) for the little chickies to drink? Dresses don't get dry, do they? Mamma, I got my dress wet when I made that splash.(2) Now the little chickens can't get in to drink, can they? I'm going to swing this way.(2) I'm going to twist up.(2) Here it's dry—here it's wet—here my dress is wet. I heard you say it was "be." (BE the first syllable of "before.") And is it 'heard,' Papa?(1) Oh, that's right. My hands don't get cold like

it's cold weather to-day, do they? Yours don't, do they, Mamma? My hands don't get cold like it's cold weather to-day, do they? My stocking's dry.(1) I'll kick you again, Mamma. I will—I surely will.(2) I'll bet I can. Now I bet you I can. Papa, will you raise my swing a trifle again? All right, I can swing in it. It's a long, long, long, long time again before another day. All of my things are dry, though.(2) Well, I can feel of it. My dress isn't dry. It's wet. Is this the one? I want this pan to sit on. I ain't going to do any more perform till I get dry. Here's one o' Mamma's things, right here. I musn't take it out, must I? Uh, huh. 'Cause it's Mamma's. Here's another one o' Mamma's that I mustn't pick out, must I? Mustn't pick out all of 'em, must I? What can I have to stir with? Here's something to stir with. There's another thing that I mustn't take out in here that I never seen. This thing is deep. There's a worm coming out—see it—see it.(3) Here's the worm. Worms are what we put into something. I'll find another worm. I will. I surely will. It's deep enough to find another worm. Looky, how much I can get. Papa, can you haul any like this?(1) I can't. Now I found something more.(1) Is that "somepin'" more? Where's the other one then? I found an apple peeling. Uh, huh. I had to throw it away. We throw apple peelings away, don't we? This is bad stuff in this pail. I'll get a pail to put the bad stuff in. I'm going to keep the good stuff to put in my pie. Goin' to put some stones in. I won't get my dress all dirty. I found something. That's Mildred going some place. Isn't that Mildred? Guess it is. You watch I can do when I'm over here. It's a cold day, isn't it? It's warm, isn't it? Isn't it warm then? This is bad, too. All of it's bad. I got the pail this time.(1) Now see how far I throw. This'll make a big pile. You watch it now. See it made a little pile, didn't it? I'll get another pail of it. I got a big pile now. Is it piled? Over here's a place for dirt. I'm makin' a big pile. I found another. I found another.(1) What are these? I don't know. When Mamma comes she'll tell me. Maybe I'll find another thing. Oh, that's a great big pile.(2) I'm going to make another great big pile. That makes great big piles. I found another. Some of this is good. This—ee—ee! I'm going to bury this. I'm going to bury this tin so it'll be good.(4) (Sings, "I'm going to bury this, bury, bury this," over and over.) Havin' hard luck with that train down there, aren't they? I found something, but I don't know what it is.(1) I bet it's a peanut.(1) Dirt on it. We don't eat dirt, do we? Scrape dirt off, don't we? I'm going to bury this. I'm going to bury this peanut. We bury peanuts, don't we? Sometimes when we have good peanuts, we eat 'em, don't we? Now it's buried. I don't know where it is. Is "bury" right? "Very" isn't, is it? The old hen's scared. She goes, "Uh-h, uh-h, uh-h" when she's scared. I'll find something in there. I see something and I'm going to take it out and see what it is. But it's onion.(3) This is onion.(2) I'm going to dig it out. It's hard work. See what it is, it's onion, so I'm going to use it. I'm going to chop it in two.(1) I'll find something else, I'll bet. I will. I'm going to find a little bit of a place for this onion. When Mamma comes out, I'm going to give her this. Bet it's a rock. I throw that rock over where the dirty and nasty things are 'cause it's a rock. Wonder what this is. Oh, I see something. Looky what I found. That's a funny thing, ain't it? This is going to go in here, isn't it? It did. I'm going to see if the paper boy left us a paper. That paper boy didn't leave us any paper so we —. Papa, you stay out here with me, so we can play. I found a little bit of rotten apple. I'll throw it over. It didn't

go over. Looky what Gaylord is. Gaylord is swinging up high. See. That went in here. Whee. 'Spect it's a windy day. I'm going to put this somewhere. Now it's going round. This is going to be grounded right here. I'm going to find another pan. I hear the cow — moo-oo — — that way at Grandpa's house. Mamma left this dipper out for me.(3) Here, here, I found something. It's a peanut. I'm going to open to see. You open this. It's good, isn't it? So we better not bury it 'cause it's good.(2) I'll stand still in the swing. I'll sit still and watch those kids. Wonder if those kids 're going to climb out Campbell's tree or not. What does lost — —? Is "lost" right? Can you do this? Can you? I like — — I like — — what is "like"? I like peanuts. Looky, Papa, this swing hurts me. There I went. Found another peanut. I got somepin' good. I'm going to tell Mamma I found somepin' good. I got some peanuts.(1) Mamma, Mamma — —. Where is she? Where'd she go? I want to — — —. Can't I go with?

5:00 P. M. (Goes into the house with her father.) Has Mamma been writing over here? Doesn't this fit? No, it doesn't, Papa. No, this doesn't.(1) Papa, got another new iron.(1) Aunt Laura, I'm hungry. I want something to eat. Uh, huh. Hello. That isn't many as I brought. I can see away out to 'em. I can't see away out to Helen.(1) I want to. I ain't going to go out doors; I'm going to get a chair. Mamma, I had two peanuts.(1) I don't see poor Aunt Ollie. Uh, huh. Aunt Laura, did you change your mind? Did you go out to your farm? I can turn the water on.(1) I'm going to wash my hands. Mamma, didn't you say you'se going to get me some warm water? In the reservoir there is. Mamma, I want some warm water. Papa, let me move this chair out. I want to watch Mamma. There isn't any warm water. I got some soap. Each of us an orange? All right. I want something to eat. I want one.(1) Mamma, I have one. I have one and you have one. I'll wheel the whole bunch till somebody wants one. I want to peel one. Mamma wants one. When she comes in she'll tell you she does. Nothin' — I ain't going to tell Mamma I'm going to have an orange. Papa's goin' to give me one right now. Are you, Papa? Now I got one — now I got one.(1) Don't break it in two 'cause Papa wants me to eat it like apples.(2) You won't break it in two, will you? Mamma, you want an orange? She said, "No." (1) Now I'll go down there (to cellar) — — I surely will. I will.(4) Now you just watch me.(1) Papa, can I come down there? Aunt Laura said I could come down there, Mamma, is it all right when Papa said I could come down? Mamma, see me down cellar. Now I beat you, Papa. You watch what I can do. You — — in here you left the camphor-oil. That buggy is big for me, Papa. Aunt Laura, I'll show you what is a new style. Turn the cap wrong side out. Don't I want that? Don't you do that again. I want it — — I, I want that cap. Will you do that again? I'll come back. Now see what you went and done. You done that yourself. You pushed me over. Oh, yes, you did. Will you do that again?(2) Papa, you give me that cap. Please, I want my cap. I want — —. There Aunt Laura, you play "hide and seek." You know how to play "hide and seek." Lyle does. That's the way to play "hide and seek." There isn't any — there aren't any. Where are the crackers? Mamma said there weren't any crackers, so we can't have any when they're all gone, can we? I want some meat.(1) It's away down where the horse is. Mamma, I want my dinner right on the stove. Want your pencil? Does it hurt your finger? You said it did. I want some oatmeal. 'Tisn't "grow." It's "grown." Isn't it? You don't know what it is, do you? When the little chickens grow, they'll be big and

then they'll be mine. I'll feed 'em. Yes. Harold had something to-day. I ain't going to tell you.(3) What is it? Do you, Mamma? I ain't goin' to tell you, I am goin' to tell Aunt Laura. Where I was and Lyle. Oh, out doors and Mamma came and got me and says I must come on home. He was goin' to break one o' Lyle's wheels on his auto and Lyle didn't like him. 'Tisn't "before," it's "ber-fore." Isn't it "ber-fore"? It's "berfore." He telled me to call. He told me to tell. I'm taller'n Ralph. If you give me some thing, I'll give you something, Aunt Laura. Oh, some candy. That little table out to your house? If you give me some candy, I'll give you some candy when you have a big table. Did you bring it over to your house? I'm going to eat on it next winter. I used to put my finger under my nose and keep it there when I was bigger than you. 'Tisn't "me." It's "I." Papa, I do use "Goldilocks." (2) I want some oatmeal—I want more oatmeal.(1) Mamma's going to give me some. Don't give me very much more. Let me do this. Do we have a clean piece when we have dinner?(1) When I get this ate up, I want some more. You just wait when I get this ate up. Mamma, I'm—Aunt Laura, I'm twelve years old yet.

6:00 P. M. (Still eating supper.) No, you hurt me. Pretty soon I'll be wanting some more oatmeal. Here are little pieces of oatmeal in my milk. Mamma, I want more oatmeal. I want sugar on it. Put a little bit of sugar on it. Your meat is spilling, Mamma.(1) Next year will be Christmas, won't it Mamma? Want some more oatmeal, please.(1) I ate it. I eat it.(2) That's the way the trainman says it. Aunt Laura. She's reading. Aren't you, Aunt Laura? Trainman.(3) Papa, you got "engine" down?(3) Is this kind o' sauce good for me? Papa said this kind o' sauce is good for me. White peaches aren't good for little girls.(2) We ate the white peaches all up. That's good for each one, isn't it? I'm goin' to give you a lot o' candy. Have you got "engine" down? You showed me the engine one day, didn't you? I heard it go when you showed it to me. Mamma, I want some sauce.(3) Mamma gave me some sauce and it has some milk in it. Papa, there's some milk in it. Papa, there's some milk in the sauce. When I get this all eaten up, there'll be some juice. I want a peach.(1) That was a sauce. Here.(12) All right. I had supper. What then? Right now? I want to.(1) Turn the light on. Will it be light then? It'll rock over where the piano is and so we better put it over here. Oh, Mamma, it's pretty heavy. Great big bed like this is pretty heavy. Oh, that's pretty heavy. And leave the door shut? And turn the light out and leave the door shut? You will? Here's my ankle. Oh, Mamma, have I got another blister? Is it? Is it a blister? Now I want to. I wasn't pulling the cord. Now, now, Mamma, I want to. I won't hurt your paper, Papa, if I stand on it. It hurts. No, I don't want Mamma to paddle. No, 'cause I can get my night-gown on all alone. You're goin' to stay in here, aren't you, Papa? Yes, so I won't be lonesome.(1) 'Cause I like you if you do. Now, don't you help me. Is this night? Now don't put your finger in. Now I'll get it right. I don't want you to button this 'cause I'm goin' to button two buttons. Leave the door open.(6) Are you goin' to stay out there all the time? Then I'll be lonesome. 'Tisn't "them." It's "those." Yes, I'm covered up. I can't see you. All right. When is Mamma goin' to eat her big chickens? She says she's goin' to eat 'em next summer. And then Grandma Brandenburg can have some of 'em. And then when Mildred and Mrs. Gregg come next summer and we have fried chicken, won't that be fun? Um, um, that'll be good—um-m. Won't that be fun? Mamma, I'll be Santa Claus if you talk through the telephone. Hello

— — hello. When we was over there we had a little doll buggy and it had a white cover on it. Papa, come in now. It's occasionally now so come in here. (Her father had said he would come in occasionally.) Is "occasionally" right? Is it "occasionally"? An' then will you go back there? That isn't where you sat. Uh, huh. Not in that rocking chair. It isn't. I saw you sit in that one way over there, so you did. I saw you. But is that one too warm? And so you had to sit in that one? One—two—three—four—five — — six—seven.(1) What is this one, Papa? This one's four. This one's five. This one's six—and—this — — one's seven.(2) 'Ess count these. Seven — — seven — — — seven. Play these were all of 'em seven — — and any of these weren't seven. Seven — —.(12) This'n's three — — and this'n's—five. That motor is running or is it a bicycle? What is a motor? Do you 'spect it's goin' home? Now play each of 'em was one—and all of 'em—and that down there that I couldn't reach. Where's Mamma? Writing? Like you're writing in here? All right. Is she reading? I hear her reading the paper.(2) Bleed — — blood. It's "bleed," isn't it? Bleed — — blood. Mamma says we mustn't climb trees so I ain't goin' to climb trees. Can you do that kind o' trick? One — two — — three — — four — — — five — — — — six. This one's four. I can find a blister. (Her uncle comes in.) Where you been, Uncle Ralph? Over to Sutherland's? What'd you do out there? And the same day you do everything, don't you, Uncle Ralph? Yes. Get up and dress and eat dinner. And then what else did you do? Milk the bossy cow and give him his dinner? My nose is dirty. I need my handkerchief. Now see how dirty it is. (Falls asleep at 7:20 P. M.)

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A CASE OF RETARDED SPEECH DEVELOPMENT

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This child, a girl five and a half years old, was first brought to my notice in the autumn of 1911, when she entered one of the city kindergartens. The expression of her countenance was that of a deaf mute and she seemed unable to utter a word, though she was not deaf. She showed an interest in what was going on by following it with her eyes and smiling pleasantly, but at the end of four months she had not said a word to teacher or child, nor had she voluntarily taken part in any of the activities—indeed, she had not learned to walk or march in a straight line or on the circle.

Physically she was somewhat over-sized and walked with a heavy lumbering movement, mostly of the hips—a spastic gait. Hands were uncertain in movement and grasp;—she could not use scissors with either hand. There was slight lateral curvature of the spine and flattening of the arches; but the reflexes seemed normal, with the exception of a clonus in either ankle. The ear cavity is somewhat peculiar in shape, though the hearing seems normal. The lower jaw protrudes sufficiently to allow her to hold the tips of two fingers within the lower incisors. This habit, which seemed to be an evidence of timidity, for a time disguised the fact that she was a mouth breather. Adenoids and tonsils were removed the following February and I began to work with her for the development of speech.

In my first visit to her home, I saw her romping with the three-year-old sister and heard her make a few babbling

sounds which the family, and especially the little sister, understood readily. Most of her communication, however, was by signs, pointings and leadings. Three weeks after the operation she began definitely to attempt to say words in a whisper, but so indistinctly as to be beyond analysis. The words were saucer, cup, pocket-book, dog, chair, hat, table, bed, towel, man, horse, bird, Washington, spoon (poon), knife (mni). In fork she had no idea how to get the "f" (besides, she was physically unable to get the lower lip under the upper teeth), but in trying to imitate me put her tongue out between her teeth, as th. At the end of six weeks she began gradually to vocalize. She could now whisper a number of words, the clearest beginning with m, b, t. and p. The first words vocalized were bow-wow (squirrel), mumi (music), and two.

Nearly all of the words given below were first said spontaneously in our games and activities (she was told the names of a few things that she did not know) and afterward repeated incidentally, so that she might hear the correct sound. Not for several months was anything like drill attempted. I have endeavored to reproduce as nearly as possible her first attempts and later efforts in the order in which she gave them. For a long time there was a sort of shadowy m that preceded or took the place of the initial consonant. This seemed to be due to the mechanical, hinge-like way in which her lips opened for enunciation.

Mar. 20. Whispered tã ũ—table, too ĭ—too big, pě th—pencil, bēthe—beads, boo—broom, nthwee—sweep, wãthũ—wagon, tĩ—stick, pãpũ—paper; slightly vocalized pẽmpũ—pencil, wě—red, bô—boy, ort—horse, boo—blue, bõ—box.

Mar. 22. In a game she shouted "Yaddy" (ready). The following words were fairly well vocalized: tũ—one, two—two, tõ—three, tōa—four, tĩ—five, ũbbũ—eraser, bō—board, tĩ—stick, mūma—ruler, lĩ—lines, pĩppa ũ—pick it up.

Mar. 27. Manner extremely shy. In most of these words a labored vocalization in very low tone and pitch: Nã dã dĩ oo tã—now going to give you tag; a wĩ, Lilly—all right, Lizzie; Dordie—Georgie; õ oo—you'll look; mã õ—make a house; mã daw—make a saw; pĩ ă ũ—pick that up; tum, Gwaty—come, Gracie; Ätẽ—Ethel (her own name).

Apr. 16. In a hoarse whisper; power—flower, Mama—Elisabeth, Ėa—Yetta, pẽmpa—pencil, mẽma—yellow, dã—grass, dẽ green, wě—red, boo—blue, mnã—chair.

Apr. 18. Mumi—Susie, Mommy—Polly, too—shoes, mũ—girl, mẽ—yes, bô—boy. Sounded sh separately with effort, but could not connect it.

Apr. 23. Daw—doll, bũ—butterfly, tow—cow, dõmthẽ—

donkey, bāby (whispered), book (whispered), good mor(ning) (whispered). Sang "By-bā-by" (By, baby, by) in low monotonous drawl.

Apr. 25. Dē—desk, thă—chair, gă—electric bulb, tā—table, dă—glass, bō—blocks, mīma—window, pēmp—penti—pencil, Pō ī—Polly, Tudy—Susie, māmū—wagon, boo—book, doo—door.

Apr. 30. Dō tē, Tudy—Go to sleep, Susie; wā ũ, Tudy—wake up, Susie; donkey—blanket; hē mē—help me; dē—dress; too—shoes; daw—drawer; bū—buttons; āmker—handkerchief; pēntū—pencil; tha—chair; tō ī—stockings.

May 2. Tī-tē—Christmas tree, tū—shovel, dongē—domtet—blanket, tittē—chicken, teep—sheep, mtow—cow, ho—hog, dō—goat, mā—rake, hort—horse, bō—broken, tē—tree, ou—house.

May 7. Tā Tudy—take Susie; hē ō dō—help me to open the door.

A review of words gave the following: nā—nail, tow—cow, boy, hor—horse, mī—pig, tī—chicken, tita tē—Christmas tree, dă—grass, dū—girl, māmū—wagon, bō—blocks, bī—good-by, pīdda—pillow, dō tē—go to sleep, pī ũ—pick it up, pīpī bā—put it back, dub—gloves, pīta—picture, dē—dress, tā—chair, ō—house, hē mē—help me, boo—book, Āta—Ethel.

May 9. Dongē—domtet, bantel—blanket, hort—horse, mwittē—whistle, o—hole, teep—sheep, āton—apon—apron, pēmpē—penthul—pencil, pu ā on Pō—put apron on Polly, toot—foot, too—shoe, tā—tail, īdda—ribbon, pu ī ā—put things away, hē mē—help me, bū dē—button dress, cā bū—I can't button it, tā ō—take it off, gō bī pentū—goat bite pencil, dō bī mē—don't bite me, lida—lion, tē bā—teddy bear, mumty—monkey, ěmbē—elephant, dump—jump, bō nē—broken neck, bow—bounce, pīpy ũ—put it up, tā ũ—tā dō—stand up.

May 14. Tām tā tāna—I can play piano; wa ũ tā, Tudy—walk up stairs, Susie; dō tē, Pō—go to sleep, Polly; tā tāna, Pō—play piano, Polly; dō tē, Pō—go sleep, Polly; domket—bamtet—blanket; titta tē—Christmas tree; dē tīt tō mē—get it for me; ting—string, pāpy—paper, pentul—pencil; mā ou—make house; dhī mī—I like milk; tārtē—carpet; tīppī—mittī—whistle; date—rake; tūbba—tūbda—shovel; hort—horse; domty—donkey; pī—pig; tiēn—chicken; wun—run; do—dog, bōptēn—broken.

May 21. Pitta—pillow; dē pu on Pō—dress put on Polly; mbō—block; mēmō—tēpo—teapot; aton—apron; dē tō—dress off; umbuppa—unbutton; nīdow—nightgown; k k toat—pēp—pitote—petticoat; ātter—wrapper; bē ār—bend your arm; hamtit—handkerchief; Pō doo tī—Polly's a good child; mboo—book (nearly a clear b, and just a suggestion of the k).

May 23. Domtĕ—bampĕtĕ—blanket; dum—drum; tate—plate; itta—whistle; dō—bō—blow (fairly good b); bam—bank; Tăn Ta—Santa Claus; tĭ păn—frying pan; tĭ—kitty; tauter—saucer; Lĕttĭ dot one—Lizzie got one; bĭ ũ—big one; nōmĭ—nĭnōm—nightgown; loo—look; pupă?—put on?; but it—button it; tie it now.

Classification with reference to reaction to number of syllables. One syllable:

bĕthe, beads	} whispered
boo, broom	
nthwee, sweep	
tĭ, stick	
tŭ, one	
two, two	
tō, three	
tōa, four	
tĭ, five	
bō, board	
tĭ, stick	
lĭ, lines	
dă, grass	
dĕ, green	
wĕ, red	
boo, blue	
mnă, chair	
mŭ, girl	
mĕ, yes	
too, shoes	
bō, boy	
daw, doll	
tow, cow	
book (whispered)	
dĕ, desks	
thă, chair	
dă, grass	
bō, blocks	
boo, book	
dō, door	
dĕ, dress	
too, shoes	
thă, chair	
teep, sheep	
tow, cow	
ho, hog,	

dō, goat
mă, rake
hort, horse
tĕ, tree
hou, house
nă, nail
tow, cow
dŭ, girl
bō, blocks
bo, boy
hor, horse
mĭ, pig
dă, grass
dub, gloves
dĕ, dress
tă, chair
ō, house
boo, book
ō, hole
teep, sheep
toot, foot
too, shoe
tă, tail
dump, jump
ting, string
dăte, rake
pĭ, pig
wun, run
dō, dog
mbō, block
mboo, book
dum, drum
tate, plate
dō, bō, blow
băm, bank
loo, look

Two syllables:

tă ũ, table	} whispered
too ĭ, too big	
pĕ th, pencil	
wăthŭ, wagon	
păpŭ, paper	
yăddy, ready	
mŭma, ruler	
Dordie, Georgie	

ō oo, you'll look,
mă ō, make house
mă daw, make saw
Ătĕ, Ethel
power, flower
Ėa, Yetta
pĕmpa, pencil
mĕma, yellow

Mũmĩ, Susie
 Mõmy, Polly
 dõmthẽ, donkey
 baby (whispered)
 tã, table
 mĩma, window
 pẽmpẽ, pentĩ, pencil
 Põĩ, Polly
 Tudy, Susie
 mãmũ, wagon
 donkey, blanket
 daw, drawer
 bũ, buttons
 hẽ mẽ, help me
 pẽntũ, pencil
 tũ i, stockings
 tũ, shovel
 dõngẽ, domtet, blanket
 titten, chicken
 bõ, broken
 bĩ, good-by
 pĩdda, pillow
 tĩ, chicken
 mãmũ, wagon
 pĩta, picture
 hẽ mẽ, help me
 Āta, Ethel
 dongẽ, domtet, blanket
 mwittẽ, whistle

pẽmpẽ, penthul, pencil
 idda, ribbon
 hẽ mẽ, help me
 lĩda, lion
 mumty, monkey
 tã ũ, tã dõ, stand up
 domket, bamtet, blanket
 pãpy, paper
 penthul, pencil
 mã ou, make house
 tãrtẽ, carpet
 tĩppĩ, mitti, whistle
 tubba, tubda, shovel
 domty, donkey
 tiẽn, chicken
 bõpten, broken
 pĩtta, pillow
 mẽmõ, tẽpõ, teapot
 ãton, ãpon, apron
 dẽ tũ, dress off
 nĩ dow, nightgown
 ãtter, wrapper
 bẽ ãr, bend arm
 dõmtẽ, bamptet, blanket
 ĩtta, whistle
 tĩ, Kitty
 tauter, saucer
 nõmdĩ, nĩnõm, nightgown
 pup ã? put on?

Three syllables:

ũbba, eraser
 pĩppa ũ, pick it up
 pĩ ã ũ, pick that up
 tũm Gwaty, come Gracy
 bũ, butterfly
 amker, handkerchief
 tĩ tẽ, Christmas tree
 tã Tudy, take Susie

bũ dẽ, button dress
 tã ô, take it off
 dõ bĩ mẽ, don't bite me
 tẽ bã, teddy bear
 ěmbẽ, elephant
 tĩta tẽ, Christmas tree
 bõ nẽ, broken neck
 pĩpy ũ, put it up

Four syllables:

a wĩ Lilly, all right Lizzie
 by bã by, by baby by
 ga, electric bulb
 mĩma, Elizabeth
 wã ũ Tudy, wake up Susie

pu ĩ ã, put things away
 gõ .bĩ pentũ, goat bite pencil
 dẽ tĩt tũ mẽ, get it for me
 dẽ pu on Põ, dress put on Polly
 Lẽttĩ dõ one, Lizzie got one

Five syllables:

Nã dã dĩ oo tã, now going give
 you tag
 dõ tẽ Tudy, go to sleep Susie
 cã bũ, I can't button it

wa ũ tã Tudy, walk up stairs
 Susie
 dõ tẽ Põ, go to sleep Polly
 Põ doo tĩ, Polly's a good child

Six syllables:

pu ā on Põ, put apron on Polly tā tāna Põ, play piano Polly
tām tā tāna, I can play piano

Seven syllables:

Hě ō dō, help me to open the door

A majority of these cases shows the requisite number of syllables accounted for; and in those cases where the number of syllables is incomplete the accented ones have been taken and the unaccented overlooked. There is evidence of response to rhythm of accent or emphasis (but not inflection), the most noticeable instance being that of the seven-syllable, where the first, fourth and seventh were chosen.

Omitted syllables and words are in every case, except "I," the unaccented:

bī, goodbye
tī tē, Christmas tree
bū dē, button dress
cā bū, I can't button it
tā ō, take it off
tē bā, teddy bear
ěmbě, elephant
bō nē, broken neck
by bā by, by baby by
Mīma, Elisabeth

pū ĭ ā, put things away
nā dā dī oo tā, now going to give
you tag
dō tē Tudy, go to sleep Susie
dō tē, Põ, go to sleep, Polly
Põ doo tī, Polly's a good child
pū ā on Põ, put apron on Polly
tām tā tāna, I can play piano
tā tāna Põ, play piano, Polly
hě ō dō, help me to open the door

Words and syllables of equal emphasis give the most regular return:

2-2, dē tō, dress off
2-2, nīdow, nightgown
2-2, bē ār, bend arm
2-2, nōmdī, nightgown
2-2, nīnom, nightgown
2-2, pūp ā? put on?
3-3, pīpa ū, pick it up
3-3, pī ā ū, pick that up
3-3, tum, Gwaty, come, Gracy
3-3, tā Tudy, take Susie
3-3, dō bī mē, don't bite me
3-3, pīpy ū, put it up

4-4, a wī, Lilly, all right Lizzie
4-4, wā ū, Tuddy, wake up, Susie
4-4, gō bī pentū, goat bite pencil
4-4, dē tīt tō mē, get it for me
4-5, dē pū on Põ, dress put on
Polly
4-4, Letti dō one, Lizzie got one
5-6, nā dā dī oo tā, now going
give you tag
5-5, wa ū tā, Tudy, walk up
stairs, Susie

Two out of three syllables are given in seven instances:

amker, handkerchief
tī tē, Christmas tree
bū dē, button dress
tā ō, take it off

tē bā, teddy bear
ěmbě, elephant
bō nē, broken neck

Three out of three, 1.

tīta tē, Christmas tree

Three out of four, 2.

by bā by, by baby by

pū ĭ ā, put things away

Three out of five, 2.

dō tē, Pō, go to sleep, Polly

Pō doo tī, Polly's a good child

Three out of seven, 1.

hē ō dō, help me to open the door

Four out of five, 1.

dō tē Tudy, go to sleep, Susie

Four out of six, 2.

pū ā on Pō, put apron on Polly

tā tāna Pō, play piano, Polly

Five out of seven, 1.

nā dā dī oo tā, now going to give you tag

Two out of two, 51.

tā ũ, table
pēthe, pencil
wāthū, wagon
pāpū, paper
yaddy, ready
mūma, ruler
Dordie, Georgie
Ātē, Ethel
power, flower
Ē a, Yētta
pēmpa, pencil
mēma, yellow
Mūmī, Susie
Mōmy, Polly
dōmthē, donkey
mīma, window
Pō ĭ, Polly
māmū, wagon
dongē, blanket
pēntū, pencil
tō ĭ, stockings
domtet, blanket
titten, chicken
pīdda, pillow
tauter, saucer

māmū, wagon
pīta, picture
Āta, Ethel
dōngē, blanket
domtet, blanket
mwittē, whistle
aton, apron
apon, apron
pēmpē, pencil
penthul, pencil
tārtē, carpet
tīppī, whistle
mittī, whistle
tūbba, shovel
tubda, shovel
domty, donkey
tī ēn, chicken
bōpten, broken
pitta, pillow
ātter, wrapper
domtē, blanket
bampet, blanket
ittā, whistle
ūbbū, rubber

There is not a single instance where an unaccented initial syllable is sounded, though few such words appear in the exercise. On the other hand, only twice is the initial accented syllable or word omitted and that appears in tām tā tāna (I can play piano) and cā bū (I can't button it), which is probably due to the fact that she does not use I and has not learned to say it.

The initially accented are classed with reference to the number of syllables sounded:

One out of two, 7.

tā, table
daw, drawer
bū, buttons
tū, shovel

bō, broken
tī, chicken
tī, Kitty

One out of three, 1.

bū, butterfly

Of these eight words, five were later given two syllables:

tā ū, table
būppa, buttons
tūbda, shovel

bōpten, broken
tītten, chicken

Classification with reference to reaction to consonant sounds:
m prefixed to initial b and w, in block—mbō, book—mboo, whistle—mwittē.

make house—mā ō
make saw—mā daw

monkey—mūmtū
milk—mī

Internal m.

Christmas tree—tī tē
help me to open the door—
hē ō dō

Christmas tree—tīta tē
help me—hē mē
jump—dump

Final m.

broom—boo
arm—ār

come—tūm
drum—dum

Initial b.

broom—boo
boy—bō
blue—boo
box—bō
board—bō
butterfly—bū
by-baby-by—by bā by
blocks—mbō
book—mboo
blanket—donkey
dongē
domtet
bantet
domtē
bamptet
buttons—bū
broken—bō

boy—boy
blocks—bō
back—bā
button dress—bū dē
bite—bī
bear—bā
broken neck—bō nē
bounce—bow
broken—bōpten
block—mbō
bend your arm—bē ār
book—mboo
blow—dō—bō
bank—bam
big—bī
button it—būt ī
beads—bēthe (whispered)

Internal b.

table—tā ū
too big—too ī
table—tā

goodby—bī
ribbon—īdda
unbutton, umbuppa

No final b.

Initial p.

pencil—pě th (whispered)
 paper—pāpū
 pencil—pěmpū
 pick it up—pīppa ũ
 pick that up—pī ā ũ
 Polly—mommy
 pencil—pempě
 pentī
 Polly,—Pō ĭ
 pencil—pěntū
 pillow—pidda
 pig—mī
 pick it up—pī ũ
 put it back—pīpī bă
 picture—pīta
 pencil—penthul
 put apron on Polly—pū ā on Pō

Internal p.

help me—hě mē
 help me to open the door—hě
 ō dō
 apron—āton, apon

Final p.

sheep—teep
 up—ū
 jump—dump

Initial w.

wagon—wāthū (whispered)
 window—mīma
 wagon—māmū
 whistle—mwītě
 walk—wa

Internal w.

sweep—nthwee
 flower—power
 drawer—daw

Final w.

cow—tow

Initial y.

Yetta—Ě a
 yellow—mēm̄ma

Final y.

boy—bō

put things away—pū ĭ ā
 goat bite pencil—gō bī pentū
 I can play piano—tām tā tǎna
 put it up—pīpy ũ
 go to sleep, Polly—dō tē Pō
 play piano, Polly—tā tǎna Pō
 paper—pāpy
 pencil—pentul
 pig—pī
 pillow—pitta
 petticoat—k k toat
 peppitote
 Polly's a good child—Pō doo tī
 plate—tate
 pan—pan
 put on?—pūp ā?

walk up stairs—wa ũ tā
 carpet—tārtě
 teapot—mēmō—tēpō
 wrapper—ātter

stand up—tā ũ—tā dō
 sleep—tē

whistle—tīppī—mīttī
 wrapper—ātter
 wake—wā
 one—tū

put things away—pū ĭ ā
 gown—dow
 nightgown—nīnōm

now—now

yes—niě

Initial t.

table—tā ũ
 too big—too ĭ
 two—two
 three—tō
 tag—tā
 table—tā

tree—tē
 tail—tā
 take—tā
 teddy bear—tē bă
 teapot—tē pō
 tie it now—tie ĭ now

Internal t.

stick—tī
 Ethel—Ätē
 Yetta—Ē a
 butterfly—bū
 buttons—bū
 stockings—tō ĭ
 Christmas tree—tītta tē
 help me to open the door—hē ō
 dō
 dress put on Polly—dē pū on Pō
 get it for me—dē tīt to mē
 go to sleep, Susie—dō tē, Tudy
 go to sleep—dō tē
 pick it up—pī ũ
 put it back—pipi bă
 picture—pita
 Ethel—Äta
 whistle—mwittē

put things away—pū ĭ ā
 button dress—bū dē
 I can't button it—cā bū
 take it off—tā ō
 goat bite pencil—dō bī pentū
 put it up—pīpy ũ
 stand up—tā ũ—tā dō
 walk up stairs—wa ũ tā
 Kitty—tī
 button it—būt ĭ
 tie it now—tie ĭ now
 whistle—ītta
 Santa Claus—Tăn Tă
 nightgown—nīdow
 unbutton—umbuppa
 whistle—tīppi—mittī
 string—ting

Final t.

all right—a wī
 pick that up—pī ā ũ
 blanket—donkey
 dongē
 goat—dō
 blanket—domtet
 bantet
 put—pū
 foot—toot
 elephant—ēmbe

pot—pō
 blanket—domtē
 bamptet
 plate—tate
 got—dō
 petticoat—k k toat
 peppitote
 nightgown—nīdow
 carpet—tärtē

Initial d.

doll—daw
 donkey—dōmthē
 desk—dē
 door—doo
 dress—dē

drawer—daw
 dōn't—dō
 donkey—domty
 dog—dō
 drum—dum

Internal d.

window—mīma
 handkerchief—āmker
 goodby—bī

teddy—tē
 handkerchief—hamtit

Final d.

red—wē
 board—bō
 good—goo

stand—tā
 bend—bē
 good child—doo tī

Initial n.

now—nā
 nail—nā

Internal n.

pencil—pē th (whispered)
 pempū
 pentū
 pentī
 penthūl
 lines—mli
 donkey—domthē
 domty
 morning—mō
 window—mīma
 blanket—dongē
 domtet
 domtē
 bantet
 bampet

Final n.

one—tū
 green—dē
 wagon—māmū
 broken—bō
 chicken—titten
 open—ō
 chicken—tī
 apron—āton—apon
 button—bū
 broken—bō
 can—tam
 chicken—tī ěn

Initial l.

lines—mli
 Lizzie—Lilly
 look—oo

Internal l.

ruler—mūma
 flower—power
 Elisabeth—Mīma
 yellow—mēma
 blue—boo
 Polly—Mommy
 Pō i—Pō
 butterfly—bū
 glass—dā
 blocks—mbō
 go to sleep—dō tē
 blanket—dongē
 domtet
 domtē
 bantēt
 bampet

neck—nē
 nightgown—nī dow

handkerchief—amker
 buttons—bū
 don't—dō
 monkey—mumty
 elephant—ēmbē
 broken neck—bō nē
 bounce—bow
 stand up—tā ū—tā dō
 I can play piano—tām tā tāna
 bend—bē
 Santa Claus—Tān Tā
 tie it now—tie i now

run—wun
 broken—bōpten
 on—on
 unbutton—umbuppa
 nightgown—nīdow
 frying pan—tī pan
 big one—bī one
 nightgown—nōmdī
 nīnōm
 put on?—pūp ā?
 button it—but it

lion—līda
 Lizzie—Lēttī
 look—loo

help me—hē mē
 help me to open the door—hē ō
 dō
 pillow—pīdda
 gloves—dub
 play—tā
 walk—wa
 I like milk—dhī mī
 pillow—pītta
 block—mbō
 child—tī
 plate—tate
 blow—dō—bō
 Santa Claus—Tān Tā
 elephant—ēmbē

Final l.

all—a
 you'll—you
 Ethel—Ätë
 pencil—pempa—pentĭ—pentŭ—
 penthu
 girl—mŭ—dŭ
 doll—daw

table—tā
 shovel—tŭ—tŭbda
 nail—nā
 whistle—mwittë—ĭtta
 hole—ō
 tail—tā

Initial s.

stick—tĭ
 saw—daw
 Susie—Mumĭ
 Tudy
 sleep—të

stockings—tō ĭ
 string—ting
 Santa Claus—Tăn Tă
 saucer—tauter

Internal s.

pencil—pëmpŭ
 pempë
 pentĭ
 pentŭ
 pentul

Gracie—Gwaty
 desk—dë
 Christmas—tĭtta
 whistle—ittā

Final s.

horse—ort—ō
 house—ō
 grass—dă
 blocks—bō

dress—dë
 horse—hort—hor
 house—ou

Internal z.

Lizzie—Lilly—Lettĭ
 Elisabeth—Mĭma

Susie—Mumĭ—Tudy

Final z.

beads—bëthe (whispered)
 lines—lĭ
 shoes—too
 buttons—bŭ

stockings—tō ĭ
 gloves—dub
 Santa Claus—Tăn Tă

Initial sh.

shoes—too

shovel—tŭ—tubba—tubda

Initial r.

right—wĭ
 red—wë
 rake—mā—date

ribbon—ĭdda
 run—wŭn
 wrapper—ätter

Internal r.

broom—boo
 three—tō
 board—bō
 Georgie—Dordie
 Gracie—Gwāty
 girl—mŭ
 good morning—goo' mor'
 dress—dë
 handkerchief—ämker

Christmas tree—tĭ tē
 horse—or
 broken—bō
 tree—të
 girl—dŭ
 grass—dă
 horse—hort
 apron—aton—apon
 put apron on Polly, pŭ ā on Pō

stairs—tă
string—ting
carpet—tărtě
broken—bōpten

Final r.

paper—pāpŭ
four—tōa
eraser—ŭbbŭ
ruler—mŭma
flower—power
chair—mnă—thă—tă

Initial f.

four—tōa
five—tī
flower—power

Internal f.

butterfly—bŭ

Final f.

handkerchief—amker
take it off—tă ô

Initial v.

None

Internal v.

shovel—tŭ
gloves—dub

Final v.

five—tī

Initial th.

three—tō
that—ă

Internal th.

Ethel—Ătě—Ăta

Final th.

Elisabeth—Mīma

Initial y.

Yetta—Ė a
yellow—mēm̃ma

Final y.

boy—bō

Initial j.

jump—dump

Initial ch.

chair—mnă—thă—tă
chicken—titten—tī—tiēn

bend your arm—bě ār
handkerchief—hamtit
frying pan—tī pan

door—dō
drawer—daw
bear—bă
for—tō
paper—papy
saucer—tauter

foot—toot
for—tō
frying pan—tī pan

dress off—dě tō
handkerchief—hamtit

shovel—tubba
tŭbda

give—dī

things—ī

yes—mě

Georgie—Dordie

child—tī

Internal ch.

picture—pīta

handkerchief—hamtit

Initial k.

cow—mtow

can—tam

Christmas—tīta

carpet—tārtē

cow—tow

kitty—tī

can't button it—cā bū

Internal k.

pick it up—pīppa ũ

chicken—titten—tī

donkey—domthē

picture—pīta

blanket—dongē

monkey—mumty

domtet

donkey—domty

domtē

chicken—tī ěn

bantet

broken—bōpten

bamtet

petticoat—k k toat—peppitote

handkerchief—amker

handkerchief—hamtit

stockings—tō ĭ

Santa Claus—Tān Tā

broken—bō

Final k.

stick—tī

rāke—mā

box—bō

tāke—tā

look—oo

bāck—bā

make—mā

neck—nē

pick—pī

walk—wa

book (whispered)

I like milk—dhī mī

desk—dē

rake—date

blocks—bō

block—mbō

book—boo

bank—bam

wāke—wā

look—loo

Initial g.

going—dā

girl—dū

give—dī

go to sleep—dō tē

Gracie—Gwāty

goodby—bī

grass—dā

gloves—dub

green—dē

go—dō

girl—mū

get—dē

goo' mor (ning)

good—doo

glass—dā

got—dot

goat—dō

gown—dow

Internal g.

wagon—wathu (whispered)

māmo

Final g.

too big—too ĭ

pig—mī—pī

hog—hō

dog—dō

Final ng.

string—ting

SUMMARY OF REACTIONS TO CONSONANT SOUNDS:

Initial out of	error	Internal out of	error	Final out of	error	
M.— 4- 4		2- 5 (omission)		2- 4 (omitted)		
B.—28-28		1- 7 " & d substit.		None		
P.—32-32		2- 7 " & t substit.		2- 5 (omission)		
W.— 3- 8 (omis., m & t)		2- 6 "		2- 2		
T.—12-12		5-34 " or made initial		4-15 "		
D.—10-10		0- 5 "		0- 6 "		
N.— 4- 4		6-18 " & m		6-22 " & m		
L.— 5- 6	"	0-25 " d & t		0-12 "		
S.— 0- 8	" t	0- 5 " & t		0- 7 "		
R.— 0- 6	" w, m, d	3-25 "		2-12 "		
F.— 0- 6	" t, p	0- 1 "		0- 4 "		
V.—None		0- 3 " & b		0- 2 "		
Th.— 0- 3	" & t	0- 1 t		0- 1 "		
Y.— 0- 3	" m	None		0- 1 "		
J.— 0- 2	" d	None		None		
Ch.— 0- 3	" t, n	0- 2 t		None		
K.— 1- 7	" t	1-15 " & t		0-20 "		
G.— 2-19	" d	0- 2 "		0- 4 "		
Labials—m, b, p, w,	Initial	67-72	Internal	7- 25	Final	6-11
Linguals—t, d, n, l, r,	"	31-32	"	14-107	"	12-67
Gutturals—k, g,	"	3-26	"	1- 17	"	0-24
Correct—Labials—	"	93%	"	28%	"	55%
" —Linguals—	"	97%	"	13%	"	18%
" —Gutturals—	"	11%	"	6%	"	0%

LABIALS

Initial	m	was	given	m	4	times	or	all
Internal	m	"	"	0	3	"		
"	m	"	"	m	2	"		
Final	m	"	"	0	2	"		
"	m	"	"	m	2	"		
Initial	b	"	"	b	25	"		
"	b	"	"	m	4	"		
"	b	"	"	d	5	"		
Internal	b	"	"	0	3	"		
"	b	"	"	d	1	"		
"	b	"	"	b	2	"		
Initial	p	"	"	p	24	"		
"	p	"	"	m	2	"		
"	p	"	"	t	3	"	(progressive assim.)	
"	p	"	"	k	1	"	(regressive assim.)	
Internal	p	"	"	0	3	"		
"	p	"	"	t	3	"		
"	p	"	"	p	2	"		
"	p	"	"	m	1	"		
Final	p	"	"	p	2	"		
"	p	"	"	0	3	"		
Initial	w	"	"	m	4	"		
"	w	"	"	t	2	"		
"	w	"	"	w	3	"		
Internal	w	"	"	0	2	"		
"	w	"	"	w	4	"		
Final	w	"	"	w	2	"		

LINGUALS

Initial	t	was given	t	12	times	
Internal	t	"	"	0	18	"
"	t	"	"	t	14	"
"	t	"	"	p	4	"
Final	t	"	"	0	11	"
"	t	"	"	t	7	"
Initial	d	"	"	d	10	"
Internal	d	"	"	0	5	"
Final	d	"	"	0	6	"
Initial	n	"	"	n	4	"
Internal	n	"	"	0	9	"
"	n	"	"	m	10	"
"	n	"	"	n	9	"
Final	n	"	"	0	12	"
"	n	"	"	m	2	"
"	n	"	"	n	9	"
Initial	l	"	"	m	1	"
"	l	"	"	0	1	"
"	l	"	"	l	4	"
Internal	l	"	"	0	22	"
"	l	"	"	m	5	"
"	l	"	"	d	1	"
"	l	"	"	t	1	"
Final	l	"	"	0	18	"
Initial	r	"	"	0	2	"
"	r	"	"	m	1	"
"	r	"	"	d	1	"
"	r	"	"	w	3	"
Internal	r	"	"	0	18	"
"	r	"	"	r	7	"
Final	r	"	"	0	12	"
"	r	"	"	r	2	"

(3, progressive assim.)

GUTTURALS

Initial	k	was given	mt	1	times	
"	k	"	"	t	5	"
"	k	"	"	k	1	"
Internal	k	"	"	0	5	"
"	k	"	"	p	1	"
"	k	"	"	th	1	"
"	k	"	"	g	1	"
"	k	"	"	t	11	"
Final	k	"	"	0	19	"
"	k	"	"	t	1	"
Initial	g	"	"	m	1	"
"	g	"	"	d	15	"
"	g	"	"	0	1	"
Internal	g	"	"	th	1	"
"	g	"	"	m	1	"
Final	g	"	"	0	4	"
"	ng	"	"	ng	1	"

(progressive assim.)

Consonants correctly sounded:

M.

mũmty, monkey
 tũm, come
 dũm, drum
 dũmp, jump

mĩ, milk
 môr, morning
 mē

B.

bĩ, big.
bẽ, bend
bã, bear, back, black
bãm, bank
bãmtet, blanket
bõ, box, block, bounce
bũ, button

book
bũ, blue, broom
bẽ, beads
bĩ, good-by
bõ, broken, board, blow
umbũppa, unbutton

P.

pĩ, pig, pick
pĩdda, pillow
pĩtta, picture
pẽmpa, pencil
pẽppytote, petticoat
pãn

apon, apron
Põ, Polly
pũp, put
pãpũ, paper
teep, sheep
dump, jump

D.

dẽ, desk, dress
dõ, dog, doll, drawer

dõmthẽ, donkey
dõ, don't

T.

tĩ, stick
tẽ, teddy
tã, tag, stairs, stand
tõ ĩ, stocking
tẽ, tree, sleep
tẽ põ, teapot
tã, table, tail, take

too
toot, foot
dot, got
bãmtet, blanket
tate, plate
pĩtta, picture

N.

nẽ, neck
nõ, now
nã, nail
nĩdow, nightgown

bõpten, broken
tĩẽn, chicken
wũn, run

W.

wa, walk
power, flower

wã, wake

K.

amker, handkerchief

G.

goo' mor', good morning

Gwaty, Gracie

Ng.

ting, string

Mp.

dump, jump

Final consonants enunciated.

t. (8, right; 3, wrong.)

domtet }
bãmtet } blanket
bantet }
dot, got
peppitote, petticoat
date, rake

toot, foot
but it, button it
tate, plate
hamtit, handkerchief
ort, horse

p. (2, right.)	
teep, sheep	dump, jump
b. (1, wrong.)	
dub, gloves	
n. (7, right.)	
bōpten, broken	bĩ one, big one
tiẽn, chicken	on
wun, run	tĩ pan, frying pan
apon, apron	
m. (2, right; 3, wrong.)	
băm, bank	nĩnôm, nightgown
tăm, can	tũm, come
dũm, drum	
ng. (1, right.)	
ting, string	

Vowel sounds enunciated. (All fairly correct.)

ĩ, 59 times	ā, 25 times	ă, 16 times	ow, 9 times
ũ, 44 "	ē, 22 "	oo, 16 "	or, 6 "
ẽ, 39 "	ō, 18 "	ô, 13 "	a(ô), 7 "
ă, 28 "	a(ũ), 17 "	o(ũ), 12 "	
ô, 24 "	ĩ, 14 "		

MISPLACED CONSONANT SOUNDS:

t for sh	in shovel, tubba, tubda; sheep, teep
" " f	" foot, toot; for, tor; handkerchief, hamtit
" " s	" pencil, penti; saucer, tauter; horse, hort
" " sl	" sleep, teep
" " pl	" play, tay; plate, tate
" " p	" piano, tana; put, pup; apron, aton; wrapper, atter
" " k	" can, tan; blanket, bantet; Christmas, tita; donkey, domty; monkey, mumty; kitty, ti; carpet, tartẽ; petticoat, peppi-tote; chicken, titten
" " l	" pillow, pitta
" " str	" string, ting
" " wh	" whistle, titta
" " ch	" chicken, tien; child, ti; handkerchief, amtĩ
" " fr	" frying pan, ti pan
" " p	" wrapper, atter
" " st	" stand, ta
" " z	" Lizzie, Letti
d " bl	" blanket, donge; blow, do
" " b	" ribbon, idda
" " j	" jump, dump
" " g	" go, do; got, dot
" " r	" rake, date
" " dr	" drum, dum
m " t	" teapot, memo
" " n	" blanket, bamtit; donkey, domty; unbutton, umbuppa; can, cam; bank, bam; nightgown, ninom
" " wh	" whistle, mitti
" " w	" window, mimo
" " d	" window, mimo
th " s	" pencil, penthul
w " r	" run, wun
b " v	" shovel, tubba

So that t has done duty for sh, f, s, sl, pl, p, k, l, str, wh, ch, fr, p, st, z; d for bl, b, j, g, r, dr; m for t, n, wh, w, d; th for s; w for r; and b for v.

Classification according to phonetic lapses:

Progressive assimilation:—pěmpŭ, pencil; Míma, window, Elisabeth; Múmĭ, Susie; Mommy, Polly; mămŭ, wagon; nă dă dĭ oo tă (the vowels of first two syllables) now going give you tag; with substitution—tĭtten, chicken; pĭpĭ bă, put it back; tĭppĭ, mĭttĭ, whistle; mēmŏ, teapot; nĭnŏm, nightgown; with omission—tărtĕ, carpet; tăm tă tăna, I can play piano (c as t set off the action).

Regressive assimilation:—in first impulse, with metathesis in second and third, kĕkĕtoat, petticoat.

Metathesis:—lĭda, lion; nŏmdĭ, nightgown; with omission—Ătĕ, Ethel.

Omission:—tă ũ, table; too ĭ, too big; tĕ, tree; boo, blue; tĭ, stick; păpŭ, paper; nă, nail; bŏ, boy; bŏ, box; oŭ oo, you'll look; mă, make; pĭ ă ũ, pick that up; Ěa, Yetta; ô, horse; dŏ, doll; bŭ, butterfly; tă ũ, tă dŏ, stand up; bŭ, button; pĭta, picture; goc' mor', good morning; pu, put; dĕ, dress, desk; apon, apron; gă, gas; tă, table, tail; bŏ, blocks; Pŏ ĭ, Polly; boo, book; wa ũ tă, walk up stairs; dŏ, door; teapŏ, teapot; gŏ, goat; daw, drawer; wă ũ, wake up; mĭ, milk; hĕ mĕ, help me; bĭ, bite; tŏ ĭ, stockings; bŭ dĕ, button dress; hŏ, hog; bŏ, broken; nĕ, neck; hŏ, house; hĕ ŏ dŏ, help me to open the door; bĭ, goodby; tĕ bă, teddy bear.

Substitution:—bĕthe, beads; Dordie, Georgie; daw, saw; tum, come; Gwaty, Gracie; power, flower; mĕma, yellow; tow, cow; dŏmthĕ, donkey; Tudy, Susie, dŏ, go; teep, sheep; mă ŏ, make house; pĭ ă ũ, pick that up; aton, apron; toot, foot; too, shoe; dump, jump; tam, can; tă, play; dŏ tĕ, go to sleep; ting, string; dăte, rake; wun, run; pĭtta, picture; hamtit, handkerchief; tauter, saucer; dot, got.

Omission and substitution:—pĕthĕ, pencil; thwee, sweep; wăthŭ, wagon; wĕ, red; ort, horse; nă dă dĭ oo tă, now going give you tag; a wĭ, Lilly, all right, Lizzie; Ăta, Ethel; dă, grass, glass; dĕ, green; tĭ pan, frying pan; mnă, chair; tĭ, kitty; mŭ, girl; dŭ, girl; mĕ, yes; ătter, wrapper; too, shoes; Tăn Tă, Santa Claus; thă, chair; tă, chair; pĕntĭ, pencil; aton, apron; tĕ, sleep; nĭdow, nightgown; donkĕ, domtet, bantet, blanket; amker, handkerchief; dub, gloves; tĭ tĕ, Christmas tree; tŭ, tŭbda, shovel; ĭdda, ribbon; dŏ, goat; tŏ, for; mă, rake; tĭ, chicken; bŏpten, broken; ěmbĕ, elephant; dŏ tĕ, go to sleep; wĭttĕ, whistle.

F. L. Wells in a monograph on "Linguistic Lapses" calls attention to the fact that a lapse is the involuntary modification

of any linguistic sensation or movement; that the process itself is always central, no matter what its source of excitation; that theoretically such modifications might take an infinity of forms, but in practice nearly all may be referred to the types of assimilation, dissimilation, omission, substitution and metathesis, the second named being practically confined to the sensory processes; that lapses are not only involuntary, they are for the most part also unconscious, *i. e.*, there is no awareness of them until their primary memory has been lost. For this reason the subjective content of the mutilated complex does not differ, in motor lapses, from the content of the unmutilated one, for the simple reason that the higher centres are not aware of the mutilation, and thus the lack of lapse appreciation is hardly of essential significance.

He thinks the most probable explanation of metathesis lies in the physical mechanism of co-ordination. The easier movement is anticipated simply because it travels over the synapses faster. One instance in the case under inspection disagrees with the view that the easier movement is the one anticipated. In *kě kě toat* (petticoat) metathesis occurs in the second and third syllables; *k* is among the most difficult letters, and she has succeeded in sounding it in only two other words, but it is anticipated in the first syllable of this word and substituted for *p*. This really brings the influence of the *k* from the third to the first syllable.

The substitution is a product of the same general processes as the assimilation, the distinction being merely that in the assimilation the effectively associated element is taken from an immediate body of linguistic elements, and is so taken principally, if not solely, on account of its spatial or temporal contiguity with the assimilated element or complex. In substitution the lapse is less directly dependent upon physical conditions, and more upon the higher principles of association, as similarity, contrast, etc. In the expression *tā tāna*, *Pō* (play piano, Polly) is found almost the only failure of the initial *p*; and that is due to association with the expression *tām tā tāna* (I can play piano) which preceded it immediately in the same lesson.

A. M. Bell in his "Science of Speech" designates articulative defects as the substitution of one organ for another, or of one mode of organic action for another, and names these as the most common:

1. Guttural instead of lingual vibration of *r*.
2. Divided, instead of centre, emission for hissing sounds, as *th* for *s*.

3. Point, instead of back, shut positions, as t for k.
4. Non-vocal, instead of vocal, formations, or vice versa.
5. Nasal instead of oral emission.
6. Obstructed nasality, etc.

He further gives as a principle of organic action that a consonant consists of two parts, a position and an action; the position, one of conjunction—the action, one of separation; and both are necessary to perfect articulation. This principle is particularly applicable in this case to the passive formation of m, b and p. (2), (3) and (4) are the prevalent defects.

Conradi, in a dissertation on the "Psychology and Pathology of Speech Development of the Child," has brought together numerous observations and the interpretations that different workers in the field have made of the language development of the child both normal and abnormal.

The vocal language of the child probably begins with the first cry after birth. Crying forcibly expels the air from the lungs, produces deep inhalations as they could not be produced in any other way and thus develops the whole respiratory system. It is even a rudimentary language itself since a skillful nurse can interpret the needs and moods of the child by its cry. It has, moreover, been graphically shown that the muscle innervation of the respiratory system, developed during the early cry period, is the same as that used in ordinary speech.

During the early babble period the child plays with its vocal and articulatory organs and makes new sounds for the pleasure they give him; the activity of the speech-producing organs is automatic, just as is that of the legs and arms. A great number of sounds are produced which are not found in our language, some of them so complicated that we cannot produce them; among these are the so-called vomitive sounds and the cluck-like sounds, found among some primitive peoples but not in our language. Dr. Hall says, "It would be difficult even with Bell's phonic notation, or with a phonograph, to classify the first vocalizations of an infant." Preyer thinks that all sounds necessary for future language are now produced, whereas Ament thinks the number of possible sounds is infinite, and that it is only with difficulty that the child sinks from this wealth of sounds to the meager level of his mother tongue. Gutzmann is still more conservative than Preyer: he says the sounds developed during this period are labials and dentals, *i. e.*, the sounds produced in the first and second articulatory systems. Wundt says the tendency to utter such a great variety of sounds has been inherited physiologically through a long series of speech-using ancestors, that soon after

birth association tracts begin to develop which make articulation possible, and adds that with sufficient data collected from the early la-la period it might be proved that, due to hereditary causes, the early sounds of children vary somewhat with nationality. As a suggestive illustration he quotes sounds uttered from the twelfth to the fourteenth week as recorded by Preyer and by K. C. Moore. *German*: am, ma, ör, rö, ar, ra, hu, na, om, in, ab, la, ho, mö, nä, na, an, mg, mb, gr, ha, bu, me, nt. *English*: eng, gr-r-r, bo-wo, ang, diddle, ing, bow-wow, th, udn, pop-pä-pä-bä, udu, bob-bä, um-go, good, momä.

The order of development of the different sounds in the child as recorded by different observers shows some general agreement though there are variations in detail. According to Schultze's principle of least effort the vowels ought to develop in the following order, ä, a, u, o, e, i, ö, ü; and the consonants thus: (1) p, b, m, f, w, d, n; (2) l, s; (3) ch, j; (4) sch; (5) r; (6) ng, k, g. Preyer does not agree with this; he says he observed the vowels to appear in this order: u, ä, a, ö, o, ai, ao, i, e, ü, oeu (French), au, oi. He thinks that the sounds do not develop in the same order in all individuals and that the order of development is certainly not due to the influence of heredity. The consonants he observed in the following order: m, g, r, t, h, b, l, n, k, j, d, p, w, s, z, f, q, x. He suggests that some of these sounds were undoubtedly uttered sooner but that he failed to observe them.

Sigismund gives the following order: (1) vowels; a, ä, u, ei, o, i. He says ö, ü, and äü are not spoken purely by children. (2) Consonants; b, m, n, d, s, g, w; f, ch, k are learned with some difficulty, and l, sch, and r, are the last to be spoken correctly. Löbisch gives the following order: m, b, p, am, ma, ba, pa (but not ab), d, t, l, n, f, s, ch, g, k. Vierordt gives this order during the third and fourth months: mam, ämma, fu, pfu, ess, äng, angka, acha, erra, hab. Preyer did not hear pf and ss so early and doubts whether f can be pronounced distinctly owing to lack of teeth. Gutzmann has heard pf so early but the f was not pronounced as an adult would pronounce it. Tracy examined seven hundred cases of mispronunciation and on the basis of this investigation arranges the following order of difficulty: b, p, m, h, a, w, o, k, d, q, n, t, f, e, j, s, ch, g, y, sh, v, th, l, r. He found what per cent the number of mispronunciations of a letter was of the total number of times the letter was found in the child's vocabulary.

Oltuszewski has observed the order of the consonants as follows: b, m, p, t, n, d, l, c, dz, ch, k, j, s, z, f, w, g, z, r, t, sz, z, cz. That f, w, l, appear much earlier with Preyer's child, he thinks, may be because there are more words in

German that begin with those letters, or that they appeared simply temporarily as transitory noises. His observations, he says, contradict Preyer's statement that all sounds used in later language develop so early, but that they confirm the physiological principle of Thausing's natural system of classification. Thausing, namely, holds that beginning with *a* all simple sounds are formed by deadening the sound of *a* seven stages in three directions. His system is arranged in the form of an inverted cone as follows: *m, b, p, f, w, u, o, A, e, i, j, ch, k, g, y*; then from *A* he drops this series at right angles, *l, r, s, ss, t, d, n*. The three letters equally distant from *A* have similar relations to *A*. Oltuszewski says, if we begin with *a* and narrow the vocal cavity forward we get *o, u*, and all the consonants of Thausing's labial and dental series, but if we narrow the vocal cavity backward we get *i, e*, and the consonants *k, g, ch, j*. He then constructs a system similar to Thausing's but leans the dental series obliquely toward the labial series and adds to the former the Polish *z*-compounds not found in German or English.

From the above we see that some letters generally appear early and others late; what is the cause of this? Schultze explains the order of development by the following law: The sounds appear in a series which proceeds gradually from those which are made with the least to those which require the greatest physiological effort. He adds, however, in a foot note that this series need not necessarily be the same with all peoples and all races, nor even with all families, owing to the influence of heredity. This he offers as an explanation for the fact that Preyer's observations do not verify this law.

Gutzmann supports this law in the main but holds that there are manifold individual variations. He agrees to Preyer's objection that the degree of physiological effort cannot be measured, but says that the study of stammering children leads one to believe in the law. He points out that the muscle action in the three articulatory systems, lips, tongue and teeth, and palate increases in difficulty in the order given. And, moreover, that those sounds which are the easiest for the child are most often repeated and are thus fixed in the motor speech memory, therefore they are more readily used when learning to speak. These difficulties, he says, cannot be measured in a scientific way, but they can be noted in a general way by observing the muscle action. In speaking of the difficulty in the third articulatory system, he says: Evidently the muscle sense is less developed in the rear of the mouth than in the fore part. People can readily move their lips and the tip of their tongue into any desired position, but not so with

the body of the tongue; and their muscle sense fails completely when they try to move their soft palate without uttering a vocal. Franke thinks the law is valid in the main during the period of voluntary imitation and decidedly valid in the combination of sounds.

Dr. Hall says: The child's linguistic development does not proceed from the easy to the hard, according to any adult standard, but the hard, and often the very hard, may precede the very easy. Rzesnitzeck says Schultze's law cannot be accepted as a fact since by the law of senso-motor association difficult sounds may come early. Some sounds which the child makes playfully give it pleasure and it repeats them. When thus the attention is drawn toward the sounds the intensity of the sensation is increased, and this in turn sets free an increased amount of energy of the motor centers. If Schultze's theory were true, he says, it ought to hold in the instruction of deaf mutes, which it does not since some produce difficult sounds early, and moreover, all pupils would have to make the same progress, which they do not. However, he admits that labials and linguals are physiologically easier and adduces as proof that many primitive people have hardly any other sounds. Ament also thinks that a categorical statement like that of Schultze is not tenable. He says: The orderly succession of the sounds is for the time being a secret which can only be solved by exact phonetic investigations in the future. He supports the following principle: The labials and dentals occur oftener than the gutturals among the first sounds of the child because they have a physiological preference. Ma, ba, pa, are first because the organs that produce them are active in feeding. Moreover those animals that swallow their food without chewing and thus have a vigorous palate often cry with gutturals. Among birds, for instance, the cock crows "kikeriki," the hen says "gagag," the cuckoo "kuku," the raven "krahkrah." Those animals, on the other hand, that seize their food and chew it before swallowing often use labials in forming their cries. Among mammals, for instance, the dog says "wau wau," the sheep "bäh, mah," the cow "muh," the cat "miau," etc.

Schultze, Preyer, Sigismund, Gutzmann and others ascribe the early appearance of labials and dentals partly to the preparation the child gets through the sucking movements while nursing. Preyer furthermore says: The position of the human foetus is such that long before birth the hands easily may touch the lips, and that the swallowing of the nourishment causes it to flow over the edges of the lips and the tongue thus causing repeated excitement of the nerve endings of those

organs. He, however, holds that the order of succession in which the sounds of speech are produced is different with different individuals, and consequently is not determined by the principle of least effort. It is dependent upon several factors—brain, teeth, size of the tongue, acuteness of hearing, motility, etc. Only in the later intentional sound formations and attempts at speaking does that principle come under consideration. Oltuszewski agrees with the above named authors as to the importance of the exercise the lips and the tongue get in sucking, and adds that the gutturals and labio-dentals appear so late on account of the complicated mechanism involved in producing them. Sully also thinks that Schultze goes too far with his principle of least effort. He says the very variability of this order in the case of different children, shows that there is no such simple correspondence as this.

It has been noticed by many observers that some sounds are made early and later forgotten. From the order in which the letters were learned we see that some sounds uniformly appear later than others. The letter *s* is used late and has a tendency to remain imperfect often for years. Deaf mutes especially have trouble with it; though they learn it early they must be corrected again and again, whereas *r*, a very difficult letter to learn, is not forgotten after the deaf mute child has once succeeded in pronouncing it. These facts Rzesnitzek takes as a basis for the following rule: "The stronger the motor sensations necessary to produce a sound the less danger there is that the sound will be forgotten after it is once learned." This principle, he thinks, explains Treitel's facts which he found in the Kindergartens of Berlin where out of 180 children examined, 3 to 6 years of age, 34.5% lisped.

It is not feasible to draw any conclusions as to the order of development of vowel sounds in the case in question, on account of the protracted babbling period before she was subjected to observation. The order of the consonants may safely be accepted as *m*, *b*, *p*, *t*, *d*, *n*, *l*, *k*, *g*; the first five being very well established, the remaining four varying in degree of certainty in the order named. Beginning with *m* as the only recognizable consonant sound (and that caused by the closing of the mouth and incidentally bringing the lips together), the other sounds have gradually emerged and freed themselves of the overshadowing *m* that at first preceded them, or introduced them as it were.

One of the most serious drawbacks to the overcoming of retardation in speech development is the fact that members of the family, and especially children and playmates, learn the language of the defective one and by responding thereto satisfy

the need which language supplies. This in turn prevents conscious effort at improvement (or a consciousness that improvement is necessary or desirable) as the result of lack of attention to details and so of comparison and discrimination. When others repeat or make use of the sounds and gestures of the defective language, they tend to fix it as a medium of communication.

Wells calls attention to the fact that the vast majority of assimilations and substitutions are recorded as lapses merely because of the transitory character of their exciting cause; when this is constantly present not only in the individual but in the entire linguistic community, its frequent occurrence gives the laws of imitation full play, the more so as it is probably an economizing process, tending to the elimination of inessential differences. The lapse then establishes itself in language or disappears according to the frequency of its occurrence and economic value; in a word, its naturalness.

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NURSERY BUGABOOS

By ELSIE CLEWS PARSONS, New York City

There are homes to-day where children are no longer frightened with ghost stories and where the devil is kept out of their circle of acquaintances until they meet him as a literary character or in Sunday school; but even in such nurseries the Old Witch and Santa Claus still hold their own, for precious fairy stories have to be read and Christmas properly celebrated. And we suspect that if Nurse knows she must forego the help of the old-fashioned bogymen she still threatens in time of stress to send for the policeman.

Outside of modern civilization this kind of nursery discipline is also in vogue. Although savage children are generally reputed less obstreperous than civilized, they, too, are sometimes scared into being quiet. In one of the folk tales of the Papuan peopled islands of the Torres Straits a mother and grandmother threaten a fractious girl with the Dôgai if she will not stop crying. Failing to heed them, this female bogy does carry her off and torture her. In fact bad children in these islands may expect to be visited at any time by a Dôgai. Fijian children are terrified into quietness by "grim, immodest representations of the human figure, about eighteen inches long," a sad kind of doll. Samoans have a juvenile scare-crow in Sina ai Mata or Sina the Eye-Eater, a bird-god. "Do not make such a noise; Sina the Eye-Eater will come and pick out your eyes," a harrassed parent would say. Thompson River and Kootenay Indian parents also threaten noisy children with a bird. "The Owl will come and take you," or "I'll give you to the Owl," they say, and Thompson River big people themselves believe that once the Owl really did carry off the child of a chief of the Bear Clan of the Nisk'a'. The chief's son was a cry-baby and one day his father became impatient and sent him out of doors, saying, "The White Owl shall fetch you." The boy went out with his sister, but Owl seems to have made a mistake, for it was the girl he carried off—to make her his bride.

Victorian children are also taught to be afraid of the Owl and whenever they hear its hoot they crawl under their grass-mats. An Owl-man is a night terror to naughty children among the Ponka Indians. A Pueblo Indian friend has told me when she and her brothers were naughty her parents would threaten to send for Owl and Coyote. We remember that Hiawatha's grand-parent

"Stilled his fretful wail by saying,
Hush! the naked bear will get thee!"

Galla and Caffre parents have helpful stories of a supernatural lion and of other fabulous monsters. Important among them is one Tickolosche, a creature, according to Caffre mothers, in the habit of pulling children outdoors and taking them far away in the veld.

Peasant mothers, like savage, rely on supernatural aid. In Switzerland misbehaving children are threatened with one Wauwau and with Sträggel, a giantess; in Epirus with the classical Lamia, a wild and

very dangerous creature; at Röttingen with the Berch, a Thing with enormous mouth and belly; in Oldenburg with Bumann, a fellow who lurks in the dark. The Esthonians have a story of a spoiled boy who one day having ridden his father's horse to death was the day after himself carried off into the depths of the sea by a strange horse who came up to him as he played on the beach. This sea horse is a terror to disobedient children. So no doubt are the fabulous animals of Germany—werwolves, the dogs of the Wild Huntsman, dragons of all kinds. The East Frisian mother whose little boy rebels against mittens tells him that *De Fingerbiter is buten*, "the Finger-biter is outside;" our own Jack Frost has probably been put again and again to like service. In Baden twilight dawdlers hear: "Go home, or the Nachtfrau will fetch you." Almost all over Germany the Sandman helps to get children to bed. Like so many Germans the Sandman is an American immigrant. I suspect that the "gobble-uns" of the Hoosier poet are also of foreign parentage.

"You better mind yer parents, and yer teachers fond and dear
An' churish them 'at loves you, an' dry the orphan's tear.
An' he'p the pore an' needy ones 'at clusters all about
Er the gobble-uns 'll git yer

Ef you
Don't
Watch
Out."

A "good" child doesn't cry. Nor, for the peace of his elders, must he be adventuresome. It is troublesome to look for children who run away. And so would-be explorers are threatened with supernatural mishap. The Euahlayi tribe of New South Wales has a bogey called from his cry Gineet Gineet. He goes about with a net across his shoulders into which he pops any children he can see. Among the Koita, a Melanesian tribe of New Guinea, the Vadavadas keep children from straying into the bush at night. A Vadavada is a man who travels only at night and who brings sickness and death to those he encounters. Chemosit is a Nandi devil, half man, half bird, with one leg, nine buttocks and a red mouth which shines at night like a lamp. He catches children who are foolish enough to be lured away from home by his night song. 'Nenaunir of the Masai is a kindred monster. He is an invulnerable, stony-bodied creature with the head of a beast of prey and feet with claws. "Don't go too far," a mother says to her children, "or 'Nenaunir will get you." Japanese boys believe that if they go swimming without permission they are liable to be drawn down under the current by the long arm of his Highness the Sea-Monkey. The Slavs of the Spreewald keep their children within bounds by saying: "Don't go there, Scerpel is there. He will cut off your head." Scerpel is a ghost with an alarmingly long head. In the Tyrol stray children are liable to be kidnapped by Stampa, a horse-headed spirit, Frigga modernized. In Brunswick there lives a Corn Woman who makes off with little children looking for flowers in the fields. Elsewhere in Germany children are kept away from pool and stream through fear of their enticing Nixe and Wasserweibe, and German woods and wilds are furnished with multitudinous witches and hobgoblins—a rich assortment of "Kinderschrecken."

Then there are "moral" stories for runaways. The Bunya-Bunya of Queensland have a story about two boys who were once left alone in camp with strict orders not to leave it until the elders returned. Nevertheless, tiring of the camp, the boys went down to the beach.

Then the Thugine or Great Serpent of the Rainbow, came out of the sea and, always on the watch for unprotected children, caught the boys and turned them into the two rocks that now stand between Double Island Point and Inskip Point. "Here you see," the old Blackfellow used to say to the boys, "the result of not paying attention to what you are told by your elders." On Rogea, an island off South East New Guinea, once lived a little girl, say the Melanesian natives, a little girl much given to wandering about. "At all times her mother and father they said, 'Don't wander, or else the sorceress in the bush will eat you.' The girl didn't listen, she walked about. The old woman saw the girl and called her and said, 'You come.' The sorceress took the girl to a cave and tattooed her. She boiled the blood and ate it. Then she said to the girl, 'You stay, I go and seek our food.' She lied to the girl, her idea was to go far searching, that she might eat her on the morrow. The girl ran home, and her father killed the sorceress."—"The Babes in the Wood" and "Hänzel and Gretchen" carry their moral with them. I suspect that the childlike mothers of Greece pointed out to their little girls that if Europa and Proserpina had *only* stayed at home . . . And no doubt our own primitive mothers are unfair enough to put even "Golden Locks" and "Little Red Riding Hood" to moral uses.

The folklorist could undoubtedly add to these stories of the misfortunes of runaway children; for primitive society is even more apt than civilized to snub the youthful explorer or inventor. In fact the story of the adventuresome lad who always begins by running away from home and always ends as a success, whether as sea-captain or cowboy, highwayman or merchant, is essentially modern.¹ Even Jack the Giant-Killer is comparatively modern. In its primitive version I suspect the Giant killed Jack and ate him up.

Like Jack's Giant and Hänzel's and Gretchen's Old Witch, savage bogies are apt to be cannibalistic. Muuruup of West Victoria was one of these epicures of child flesh. Troubled parents would threaten to send for an agent of his who lived in the moon. Once upon a time, in Pulu, an islet of the Torres Straits, the boys and girls used to disobey their parents and play a game of twirling around with outspread arms. They played every night on the beach, until finally a great rock fell from the sky and killed everybody on the island—except one indispensable couple. Parents still tell their children never to play this game at night, and the old men remind bad children that by and by, if they are not good, the Pulu Stone will come and eat them up. In one of the Zuñi summer dances there is a mask of an old woman, a ceremonial scold, and part of her "business" is to threaten to eat up the children. A katchina in a Hopi dance makes the same threat. Both Chemosit of the Nandi and 'Nenaunir of the Masai are addicted to devouring children. So is the Songômbi, a fleet-footed, ox-like bogy of the Betsilio of Madagascar.

It is etiquette in Caffre families for older children to leave the hut when their elders begin to eat; but as elsewhere the younger hang around for a taste—until their father bids them go out into the veld to call Nomgogwana. If the youngsters object, Father says in an off-hand manner: "Very well, sit where you are; the food will not cook, as you know, till Nomgogwana comes, and then when he does come he will be so angry at seeing the food uncooked that he will

¹ As for the triumphant girl adventurer, she is altogether too modern for a place in literature as yet. The meaning of *adventuress* is still circumscribed, and girls who like stories of adventure have to read boys' books.

eat all the children he can find." Further admonition at the moment is naturally uncalled for, but if the children happen to return too soon for parental comfort, they are told that Nomgogwana has not come yet because they did not go far enough out on the veld to call him, that he did not hear, that the conditions were not right, the usual explanation of failure is summoning a spirit.

It is probable that the savage like the civilized nursery is particularly conservative, and so we wonder² if this marked tendency to cannibalism is an echo out of a remote past where cannibalism was not merely ritualistic as it is among almost all the savages of to-day.

In some cases the bogymen comes systematically to the help of parents. The Zuni "scold" and the Hopi katchina, for example. Both are much dreaded by the children. The Hopi mask goes up to the child and says: "You are naughty and bad; we have come to get you. You fight the other children, kill chickens, etc., and we shall now take you away." The child naturally begins to cry and promises to be good. It is said that formerly the katchina would actually carry off a child; but that once a child died of fright,—hazing anywhere having an unlooked for outcome, and at times tragic.

In western Victoria the white kangaroo pouch masks worn over head and face by clowns at corroborees are often used to frighten misbehaving children.³ Catholic children go to confession when they are seven years old. What impression, we wonder, does the unseen figure in the confessional make upon their imaginations? Even outside of the confessional, the black-garbed priest was once made an object of fear, according to Fénelon, to little French children. In parts of Germany a mask of St. Nicholas makes a preliminary visitation every year some evening early in December. He is dressed in fur, of course, and he carries a switch or rod. He threatens the naughty children, throws apples and nuts out of his bag to the good, and has all the children say a prayer. Our invisible Santa Claus who merely writes the names of good and bad children down in his books is a good-for-nothing fellow in comparison. In Germany, too, St. Nicholas has even a spring deputy, so to speak, in Easter Rabbit, that cunning little animal who forgets the bad children and brings his eggs only to the good.

Sinners as well as saints aid nursery discipline. To Roman children Attila was a bogymen; to Assyrian, Narses; to Moslem, Saracen, and Turkish, Richard Coeur de Lion and Matthias Corvinus; to Persian, Tamerlane; and to children throughout Europe, Bonaparte. There were barrios in the Philippines where a child who cried was hushed with the exclamation "Castila!" I have no doubt that many a Spanish conquistador became a bogymen to American Indian children and that, already a bogymen to adults, our own Rough Rider in his ceremonial mask will serve for one some day to children.

The rôle of the bugaboo in the child's life has sometimes been questioned by the modern educator, that unquiet person who has begun to question everything—even the last two lines of "Now I lay me down to sleep." But without the help of bugaboos we ask in

²(And no more than wonder.)

³In modern life we sometimes get an amazing individual repetition of a savage custom. In the Benson family, writes one of its members, it was customary for an ape-like mask to bring the children their presents at Christmas and on birthdays. On one occasion one of the boys was greatly terrified by this "delightful" family custom. (Benson, A. C., *Where No Fear Was*, pp. 40-1. New York and London, 1914.)

turn whether children could be completely prepared for society, at least for many of its boundaries, sanctions, and goals. Thanks to Ravenous Monster or Old Witch, fear of the Unseen or Unknown takes the place in their mind of curiosity. Stories of the misfortunes of the wayward have set a value on obedience to authority and helped make potentially good subjects, wives, and worshipers. The fearful foreigner has helped develop the patriotism that identifies itself with bloodshed. Ghost stories or Christmas gifts have turned attention from the more to the less immediate reward, from the needs of every day to the promises of a life to come. Truly, so far as society appeals for its support to the spirit of apprehensiveness, of docility, of hatred, and of long-suffering, the nursery bugaboo is an assistant invaluable and indispensable. If we reject its services, let us be sure we realize what we forego.

HOW THE ENGLISH TEACH THE WAR

The London "Times Educational Supplement," January 5, 1915, has an article on American education and the war, in which it resents the charge that John Bull is an ostrich burying its head in the sand. It says that in America there are a few superintendents who have ordered their teachers to avoid discussing the horrors of war in the class-room, and occasionally not to refer to the war. One educational journal says children hear too much of the war outside and that grown-ups are tired of it and will not read the war news, but others feel it a supreme privilege to be a contemporary observer or to hold front seats at this spectacle of the ages and share its emotions. The "Times" goes on to quote approvingly the plea of the editor of the PEDAGOGICAL SEMINARY that the war affords a rare opportunity to broaden political and historical horizons, etc. Carl Schurz thought the strongest and cheapest of all coast defences consisted in "Fort Justice" and in "Forts Good Sense, Good Will, Self Respect" and if trouble arose, "Fort Arbitration." Our Commissioner Claxton thinks there is a great opportunity in the war for America to assume "the intellectual leadership of the world," and the "School Review" of Chicago says that American universities now have an opportunity to capture the "thousands of students who have been attending universities in Europe," as we are trying to capture the world trade.

A CIRCULAR ISSUED BY THE LONDON COUNTY COUNCIL ON THE TEACHING OF GEOGRAPHY AS AFFECTED BY THE EUROPEAN CRISIS

THE TEACHING OF GEOGRAPHY AS AFFECTED BY THE EUROPEAN CRISIS

In the teaching of Geography the military aspects of that Science will naturally occur to teachers at the present time. The general effects of physical conditions upon any campaign, and their political effects upon the present campaign. The mere elements of the former are easily appreciated by young people and once they have been pointed out they can be applied to the case of the wars now in progress. It must first be made clear how the whole effect of geographical conditions upon campaigns as distinguished from the effect of human handiwork resolves itself into two conceptions:

- (1) The natural line of advance.
- (2) The natural obstacle.

(1) An army is a number of men artificially concentrated on to a small space, needing therefore, accumulations of supply, and further dependent for its success upon rapidity of movement. It will therefore find natural lines of advance whereupon these conditions are combined.

They are commonly combined, in Europe at least, along the great river valleys where those river valleys lead from one territory into another, *i. e.*, from one belligerent centre to the centre of the enemy's force. Thus the Rhine, the Elbe, the Middle Vistula have never been lines of advance. But the Upper Dneiper (as in 1812), the Oise and the Marne and the Lower Valley of the Meuse and the Upper Valley of the Moselle have been constantly throughout history lines of advance.

It should be shown how a river valley providing (a) primitive communication by water, (b) water supply as well as communication, leads to a string of towns upon its course. These towns become convenient depots or places of accumulation upon which armies can depend for their stores, and are sometimes also *political objects* for armies, i. e., places the capture of which will politically weaken the enemy: thus, advance down the Oise and the Marne is towards Paris, the capital of France, and the natural objective of an invader. Further, it should be pointed out how the river valley having thus created a string of towns along it creates a road uniting them; how dependent armies are upon roads: modern scientific advance has not appreciably diverged from these old lines, for the *railroads* naturally link up towns and naturally find their easiest ways down valleys, while the later *petrol* traffic, so important to modern war, will follow a main road.

Let it be noted how, in the present war, the German advance on France followed first the valley of the middle Meuse, and next the valley of the Oise, while the Austrian advance upon the Russian armies followed the valleys of the Upper Vistula.

In connection with the movement of armies also point out the importance of the great *Plains*. Thus the original German invasion of France is mainly directed across the *Belgian Plain*, shirks the difficult hill country of the Ardennes, avoids the Vosges, and neglects altogether the Swiss Hills to the south. In the same way the transference of troops from east to west across Germany from one point to the other, follows in the main the *Baltic Plain*.

The *great Plain of Poland* is the theatre of all the principal movements in the eastern campaign; the Carpathian mountains, on the other hand, interfere at once with the Russian advance into Hungary, and compel that advance to take place to the north of them and constrain the Austrian effort against Russia also to be to the north of their range.

(2) It should be pointed out how *obstacles* to the advance of an army largely determine a campaign. That an obstacle in a military sense is not something which an army cannot traverse, but which an army traverses with more difficulty than the country before and behind and on either side of it, and in one where a smaller number of men can hold up for a time a larger number of men. The obstacles to armed advance are, in order of their importance, the river, the range of hills, the forest, the marsh, and the desert. Armies are constrained to use, are checked by the enemy at, and march by roads necessary leading to *defiles*, that is, narrow and special opportunities of overcoming obstacles: *fords* over rivers, *passes* over hills, *clearings* or *gaps* through forests, *causeways* naturally formed by somewhat harder ground through marshes, and in *deserts* the isolated points where water may be found.

Examples of all these in the present campaign:

(1) The Rivers: The Middle Vistula and the Seine; the Lower Meuse, the Sambre, the Aisne; the extreme Upper Meuse. Probably later also the Rhine, the Elbe, and the Oder, all of which lie perpendicular to an invasion of Germany. Also the Suez Canal, the main barrier to advance upon Egypt.

(2) Hilly Country: The Ardennes, the Vosges, and the Carpathians.

(3) Forests: The Ardennes, the Argonne, and the Polish forests south of the Pilitza and West of the Vistula.

(4) Marsh: Only one considerable example, the lower part of the Pilitza. One small but very important example as affecting the issue

of this war, the marshes of the Yser, which baffled the German advance upon Calais.

(5) Desert has only appeared in the possibilities of a Turkish advance upon Egypt. In all these cases defiles are apparent.

Of natural defiles over rivers, that is of fords, few, but of passes over hills, the passes of the Vosges and of the Carpathians; of gaps through forests, the three roads through the Ardennes and the gap of Mons. Of causeways through marsh, the hard way in front of Nieuport over the Yser, and the causeway to Suwalki on the borders of Eastern Prussia; while of defiles in desert land the water supply of Nakhil, the Peninsula of Sinai, and the water supply of Bizra and Katich along the Mediterranean roads from Syria into Egypt.

Another aspect of the geographical condition of the war is that of *economic supply*. Let it be noted that England alone of the combatants cannot feed herself, but is dependent upon over-sea supply; Austria and Germany together can just feed themselves, so can France with the aid of North Africa, though with difficulty after the destruction of harvests in the north during this war, and the loss of part of the rest of the harvests through calling out the men. Russia can amply feed herself.

Modern munitions largely exotic to Europe. Note, further, how modern munitions are largely exotic to Europe, or, if found in Europe are found only in very restricted regions: *e. g.* Petrol, an absolute necessity; indiarubber and even many of the metals are now mainly provided by the New World or the Tropics; copper, an essential to artillery; tin.

Thus any blockade of the Germanic Powers tells heavily. Aluminium and certain nitrates of explosives. Coal, however, and iron the Germanic Allies have in abundance.

Note again the geographical conditions of the *centres of armament*, principally the neighborhood of coal and iron coupled with a fair distance from the front to protect such centres against immediate attack: *e. g.* in France, St. Etienne and Creusot. In Germany, Essen.

The opportunities of the enemy to obtain goods through neutral powers should be noted, notably Holland, Scandinavia, and Italy, and Switzerland.

Finally, of course, and especially in this connection, the effect of British sea-power: notably in the recent closing of the North Sea. Show how petrol, for instance, would no longer reach the Germanic powers at all if (a) Russia advances as far as Cracow in Silesia; (b) Roumania either forbids export to or enters into active hostilities with Germany.

(Signed by the Education Officer.)

A CIRCULAR SENT TO MEMBERS OF AN EDUCATIONAL STAFF IN IRELAND

Without dwelling too much upon it, we should endeavor to utilize the interest aroused by the present war in the interest of school work. This will be more especially possible in the standards above the third.

Will each master please consider in what directions he thinks this can be done for his own class, and let me have his suggestions so that we can make any necessary modifications in the schemes of work.

E. g., 4th standard: Means of communication of Great Britain. Position of naval stations, camps, etc. Why railways, roads, etc., are being guarded. How war interferes with trade and industry. Ancient and modern methods of warfare.

5th standard: As above, and the geography of the war area. Bearing of topography upon war. Where fortified posts are placed and

why. Why Belgium is a battlefield. Position of fleets. Trade routes to the continent. How trade is affected.

6th and 7th standards: As above, with a brief account of the relations of the nations engaged. The importance of the Mediterranean. Why price of food has increased and may do so further. Area from which Britain obtains food and raw material. War and unemployment. A simple account of some of the government measures for insurance and relief.

There is no need for me to point out the importance of saying nothing at this juncture that would savour of party politics, or that would tend to cause anxiety or arouse hatred against other nations.

(Signed by a Principal.)

BOOK NOTES

A foundational study in the pedagogy of arithmetic. By HENRY BUDD HOWELL. New York, Macmillan Company, 1914. 328 p.

The writer here attempts to summarize the many widely scattered recent studies in the genesis, psychology and didactics of number in a way to make them readable and interesting, as well as more concisely contributory to the kind of material which he thinks the subject matter of the prolegomena to any future arithmetic demands. The dean of the school in which the study was made has a brief introductory note. The author classifies the studies which he reviews under genetic, psychological, statistical and didactic or apperceptive studies, which we think an excellent classification. He then describes the various experiments to determine ability of number apprehension and any fundamental processes, although this is far too briefly treated. Those who expect conclusions to be definitely drawn here will be disappointed but the work is a valuable contribution to the subject.

Travel notes of an octogenarian. By W. SPOONER SMITH. Boston, Gorham Press (c. 1914). 215 p.

A clergyman of eighty-eight made a trip around the world alone, and here records in a very interesting way his observations. He had leisure and took his time, and his notes are very modestly printed in the hope that they will act as an inspiration for the old. We are accustomed, he says, "to look on old age as a desert of inactivity and dull monotony. This record proves that it can be shot through with thrills and enthusiasms that might well be envied by vigorous youth." The result was more than the accomplishment of a journey for we are told that the author was made over. His eyes were opened and he felt for the first time the real joy of life. He hopes it will spur on others to do likewise. It makes no literary claims but is really a selection of letters.

Principles and methods in commercial education. By JOSEPH KAHN and JOSEPH J. KLEIN. New York, Macmillan Company, 1914. 439 p.

Part one is the principles, dealing in detail with essentials and value, the course of study, and general principles; part two, special methods, business arithmetic, office practice, book-keeping, accounting, commercial geography, the technique of commerce, its history and law, economics, business English, stenography and typewriting; part three, special problems, such as the preparation and equipment of teachers, relation of the secondary school to the high school of commerce and to the business community.

Principles of secondary education, written by a number of specialists. Edited by PAUL MONROE. New York, Macmillan Company, 1914. 790 p.

This is a very valuable and comprehensive contribution to the subject, with twenty-one chapters, very largely by different experts. The editor sketches the history of the subject, Farrington, European sys-

tems; Cubberley, state systems; Snyder, rural high schools; Thomas, inspection; Lewis, administration; Snedden, the curriculum, the elective system, and the six-year course; Croswell, the private secondary school; Whipple, the physiology and hygiene of adolescence; Dewey, art in education, etc.

Child training as an exact science; a treatise based upon the principles of modern psychology, normal and abnormal. By GEORGE W. JACOBY. New York, Funk & Wagnalls Co., 1914. 384 p.

This is certainly an original volume, written purely from a medical point of view and with very little consideration of other topics, which a psychologist and pedagogue would expect, with 15 illustrations. After an historical survey comes the second part on the psychology of childhood, first the organs of mental activity, cords, nerves, psychic functions, development of mental activity, the psychic abnormalities, organic and functional, psychanalytic training from the point of view of parents, children, bodily and intellectual development, formation of character and will. Then comes therapeutic training, the educable, causal and symptomatic treatment, and the uneducable.

School discipline. By WILLIAM CHANDLER BAGLEY. New York, Macmillan Company, 1914. 259 p.

This work is written chiefly for the young teacher. It discusses what is meant by a well disciplined school, the causes of an unruly one, general and specific, its transformation and the qualitative standards of school work, the importance of the objective attitude, the individual assignments, stimulating group responsibility, the tonic influence of a regimen of work, the place and limitations of coercive measures; all these are forms of transforming the unruly school. Then the author treats coercion through rewards and penalties, corporal punishment and the reaction against it, contemporary school penalties, troublesome types, discipline and interest.

How to teach American history. By JOHN W. WAYLAND. New York, Macmillan Company, 1914. 349 p.

This is a text-book for normal schools, training classes, institutes, and a handbook for teachers and students. Its thirty chapters discuss such topics as the meaning of history, topics related to it, aims, survey of the field, place and time to begin, history in the grades and methods, in the high school, normal school, history in biography, dramatics, the visual appeal, dynamics in history teaching, why some pupils dislike it or fail, making and using questions, quizzes, use and abuse of dates, use of songs, source books, voyages of discovery, mnemonic devices, teacher's need to know books and himself, note-books, etc.

The school, the child and the teacher. By ELLEN WINIFRED ADAMSON. New York, Longmans, Green & Co., 1915. 394 p.

This book consists of suggestions for students in training and is chiefly addressed to young teachers. The main topics are the school and its work; the student as learner, as teacher; the cultivation of speech; teaching reading, writing, spelling, grammar, composition, history, nature, geography, arithmetic, singing, drawing, handwork and physical education, each of which has a chapter.

Fritz Reuther; some things about his life and work, with a translation of a few of his humorous verses. By CHARLES H. THURBER. Boston, Privately printed, 1914. 51 p.

Dr. Thurber many years ago as a student in Germany was brought in contact with this writer, purchased his works and became familiar with *platt Deutsch*. He here gives us an extremely graphic pen-picture of his impressions of the man and his work, and in the appendix translates into verse a number of his poems.

Louis Clark Vanuxem Foundation. Lectures delivered in connection with the dedication of the Graduate College of Princeton University in October, 1913. Princeton, Princeton University Press, 1914. 144 p.

This contains four lectures by different men, viz., Boutroux, on "Science and Culture;" Riehl, "The Vocation of Philosophy at the Present Day;" Godley, "The Present Position of Classical Studies in England;" and Shipley, "The Revival of Science in the Seventeenth Century."

An appeal against slaughter. By MARION E. COVILLE. Syracuse, C. W. Bardeen (c. 1914). 161 p.

The first sixty pages of this nondescript book is labeled "An Appeal Against Slaughter." The rest of the book, pages 64 to 161, seems to be an index or a kind of analysis, and all is based on proverbs, scriptural and other passages, but what the book is and means or is for the writer is entirely unable to make out.

The teaching of handwriting. By FRANK N. FREEMAN. Boston, Houghton, Mifflin Company (c. 1914). 156 p.

This is an interesting and systematic work dealing with the nature of the problem, the constitution and development of the writing process, the physiology and hygiene of writing, how to teach it, the aims and standards of handwriting.

Charley Circus. By WILLIAM JAMES MORRISON. Nashville, Tenn., Smith & Lamar (c. 1914). 3 v.

One of these volumes is taken up with the Indians of Brazil, another with hunting and trapping in Brazil, while the other is entitled "In the Wilds of Brazil." They are narratives told evening by evening to children, in plain and homely wise.

Letters and papers of John Singleton Copley and Henry Pelham, 1739-1776. Boston, Massachusetts Historical Society, 1914. 384 p.

This sumptuous and illustrated volume contains documents of first importance and might be called almost a monumental contribution of this society to the history of the country.

The teaching of oral English. By EMMA MILLER BOLENIUS. Philadelphia, J. B. Lippincott Company (c. 1914). 214 p.

The chapters are, "One-minute talks" with beginners and older students, what to avoid, choice of a subject, debate in English and history, the symposium, composition, history club, organizing a government as a class exercise.

The black hand and other stories about schools. By C. W. BARDEEN. Syracuse, C. W. Bardeen, 1914. 213 p.

This new volume of six school stories does not dim the lustre of Mr. Bardeen's past achievements in this line. He is the story-writer of educational life in this country par excellence.

Handbook of exposition. By R. A. JELLIFFE. New York, Macmillan Company, 1914. 222 p.

This book on exposition treats of definition, analysis, the explanation of a process, expository narrative, description, the familiar essay, criticism.

A decade of American government in the Philippines, 1903-1913. By DAVID P. BARROWS. Yonkers-on-Hudson, World Book Company, 1914. 66 p.

This is a very interesting story, briefly and concisely told, and cannot fail to be of interest to those concerned.

Trades and professions. By GEORGE HERBERT PALMER. Boston, Houghton Mifflin Company (c. 1914). 36 p.

This is a characteristically lucid and original point of view which will be of the greatest interest to all concerned.

Important features in rural school improvement. By W. T. HODGES. (U. S. Bureau of Education, Bulletin, 1914, No. 25.) Washington, Government Printing Office, 1914. 59 p.

The Danish folk high schools. By H. W. FOGHT. (U. S. Bureau of Education, Bulletin, 1914, No. 22.) Washington, Government Printing Office, 1914. 93 p.

The rural school and hookworm disease. By JOHN A. FERRELL. (U. S. Bureau of Education, Bulletin, 1914, No. 20.) Washington, Government Printing Office, 1914. 43 p.

The demonstration play school of 1913. By CLARK W. HETHERINGTON. (University of California Publications, Education, Vol. 5, No. 2, pp. 241-288, July 30, 1914.) Berkeley, University of California Press.

Papers on the influence of smoke on health. Edited by OSKAR KLOTZ and WILLIAM CHARLES WHITE. (Mellon Institute of Industrial Research and School of Specific Industries. Smoke Investigation, Bulletin No. 9.) Pittsburgh, University of Pittsburgh, 1914. 173 p.

Dental clinics for school children. By EDWARD F. BROWN. (Reprinted from the Journal of the Allied Dental Societies, September, 1914.) pp. 437-448.

The health supervision of school children of New York City. By EDWARD F. BROWN. (Reprinted from The Medical Review of Reviews, September, 1914.) 10 p.

Fatigue and its effects upon control. By ISAAC EMERY ASH. (Archives of Psychology, No. 31, June, 1914.) New York, Science Press, 1914. 61 p.

- History of the United States.* By MATTHEW PAGE ANDREWS. Philadelphia, J. B. Lippincott Company (c. 1914). 426 p.
- The History Teacher's Magazine.* November, 1914. Vol. V, No. 9. Philadelphia, McKinley Publishing Co.
- Makers of America; Franklin, Washington, Jefferson, Lincoln.* By EMMA LILIAN DANA. New York, Immigrant Publication Society, 1915. 205 p.
- Primer language reader series.* By FRANKLIN T. BAKER, GEORGE R. CARPENTER, and FANNIE WYCHE DUNN. New York, Macmillan Company, 1914. 118 p.
- The teaching of poetry in the high school.* By ARTHUR H. R. FAIRCHILD. Boston, Houghton Mifflin Company (c. 1914). 184 p.
- The anchorage; a philosophy of life in English verse.* Foreword by ALFRED E. P. ROCKWELL. Worcester, Davis Press, 1914. 53 p.
- Sheltered; a poem.* By MARVIN M. TAYLOR. Worcester, Privately printed, 1912. 49 p.
- Fifteenth annual report of the State Board of Insanity of the Commonwealth of Massachusetts, for the year ending November 30, 1913.* Boston, Wright and Potter, 1914. 367 p.
- American and private school directory. Volume seven.* Compiled and published by HARRY J. MYERS. Chicago, Educational Aid Society (c. 1914). 292 p.

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THE SCIENTIFIC PLAY WORLD OF A CHILD

By JOSEPH K. FOLSOM, Clark University

In recent years there has been an ever increasing interest in the phenomena of the child mind. Inquiry seems to show that a large proportion of people have not a very clear recollection of, or at least no great interest in the details of their own child life. Occasionally, however, we find an individual who for some reason possessed in his early years an unusually active imagination, constructing a play-universe which remains clear and impressive in memory throughout adult life. My own child life was characterized by a vivid imagination, and the world in which I lived, though illustrating very well many general principles of genetic psychology, displayed also some unusual features which I have been unable to find developed to a like extent in the experiences of other persons. Without desiring to take in any way an egotistical attitude, I shall try to describe and explain candidly the world in which my childhood from six to eleven was spent. Fortunately I have a very clear memory of the doings of these years, and especially valuable is a detailed and accurate account of the same which I wrote, while yet a child, only a few years after the events which I describe.

The activities of this play world began in crude form about the age of five, reached their most elaborate development between nine and eleven, and ceased abruptly at eleven, due to a change in residence and school life. About this same time I began to write an account of the play I had just given up, without any definite plan of completing it into a uniform

whole, but writing largely from the mere temporary interest of so doing. Thus various portions of the manuscript were added during spare times and according to momentary inspiration, for a period of three years. But as time went on I saw the possibility of making a complete history, and I also got a better perspective and understanding of my own mind; so I continued more rapidly and by the age of fourteen find that I had written a full account of the whole play-world. It is interesting to note the changes in the childish style and the broadening of my own conception of my subject as I grew from eleven to fourteen. This manuscript contains altogether about ten thousand words, and is liberally illustrated by drawings, maps, and diagrams. It is carefully divided into chapters, and paragraphs with headings, and is rich in tabular classifications and foot-note references. In the description to follow, which I am writing at the age of twenty-one, I can do no better than to quote many passages from the original childish manuscript.

My earliest recollection of my play was a habit of talking aloud to certain stones and ashes in the back yard, which I vaguely personified. Soon I began to personify a great variety of objects and sustained certain personal relations to them—of course always to my credit or advantage. When I was about six, my sister, whom I will call B, about four years younger than I, began to appreciate and to sympathize with my ideas. She was thenceforth my ever present and only companion in this play. Beginning my history at the age of eleven, I wrote:

"Now mamma does not let me play in the street with the other children, I was therefore home. I used to imagine inanimate things to be alive, and I would talk to them. . . . The play gradually developed and changed until, I remember, when at P. they gave me some empty spools which I took home. B. also had dolls. We made believe these were alive. Some of my early spools were by name or class: Elizabeth Rosebush, Nice Joe [from my own name], Naughty Joe, Brother the Bear, 5 other Bears, Little Bears (small spools). We named or classified our spools gradually. . . . There were families which grew larger and larger. There were also some people made out of paper which we played with. One day the spools . . . , who were mostly bears, were changed to people. . . . Later we had so many make-believe people that I divided them into systems."

By a "system" I meant a nation, or tribe, or community of similar play people. The "Reaperson System" consisted of all the "real," "alive" people in the household, including our domestic help and also the dog. These I clearly differentiated in my childish mind from all the other people, who were imaginary. My mind,—and I am led to believe this is

true to a large extent of most children—although highly imaginative, was at the same time intensely realistic and logical. But in my case there seemed to be an unusual, an exaggerated loyalty to fact and to logical consistency. The Doll System consisted of all B's various dolls; the Spool System of the spools mentioned above; the Tower System was a collection of old broken chess men; the Animal System was made up of Noah's Ark animals; the Pet System of beautiful paper ladies cut from fashion magazines; the Mystery System of originally constructed paper figures; and the Daw System of miscellaneous blocks of wood. Then out of doors we had the Stone System, another Animal System, Pet System, and De Peta System, all composed of stones varying in size from pebbles up to about twenty pounds in the case of the more dangerous "animals." Then there was the great Volcanic System, whose members at first were cratered mounds of earth out of doors and furniture or boxes indoors, but later gained the unique power of becoming disembodied spirits and traveling invisible to any place we desired.

In this universe of play people for four or five years I truly lived and moved and had my being. It was only one out of several worlds of my imagination, but of all these it was the one very realistic and concrete world and received the most attention. During these years B and I were mostly isolated, except at school, from other children, who I believed could never appreciate but only ridicule my play; and hence I had no desire to stir outside my realm or invite others within. B's social tendencies developed much earlier. How vividly I remember one occasion when I was ambling around the backyard, studiously looking at the ground and laying plans in my mind for the construction of some imaginary railroad, while on the other side of the fence stood a boy of my acquaintance, laughing at my queer behavior. How I longed to go out with an air of superiority and give him a scientific explanation of what I was doing; but at that age I was sensitive and not well versed in the rough and ready ways of the street, so I realized that any such attempt would only provoke more ridicule.

My mind of course had numerous tendencies in common with most other imaginative children, which tendencies might be explained in terms of racial inheritance. Such were the prevalent animism, the use of symbols, and the tendency to construct an ideal world of myth and story. The material content or subject matter of my play-world was necessarily taken from my real environment, and it is the nature of the experience selected and the interpretation and elaboration of that experience which is so unusual. Out of the universe

of objective facts continually pressing upon the childish senses, certain definite groups of things and their related ideas impressed my mind and became objects of absorbing interest, much to the exclusion of other facts. I called these "fads" or "hobbies," and I find a remarkable similarity between these and some of the child hobbies of Mr. L. C. Day of Clark University, who also has written of unusual childhood experiences.

My principal groups of objective interests during this period were as follows: Railroads, human physiology, astronomy—especially the moon and comets, volcanoes, extinct animals, legal trials, and a group of ideas about electricity, fire, fire alarm bells and whistles, etc. Like most children I attended to the striking, the unusual, the violent, the vigorously moving, and the mysterious elements in my environment, to the exclusion of the commonplace. But immediate personal experience was not essential to interest in my case—in fact some of my strongest interests were kindled by learning about remote objective things from my mother or from books. My mother gave me early fundamental instruction in human physiology and hygiene; and I picked up scraps of information about volcanoes, comets, criminal trials, ancient mammals, etc. Before long I was ravaging my father's library with insatiable curiosity to find out all I could about the function of the spleen, the nature of comets, the phases of the moon, and the probable size and appearance of the most hideous creatures of pre-glacial times. My interest in things scientific seemed to develop in exactly the reverse of the recapitulatory order expounded by Dr. G. Stanley Hall. I was first of all interested in the pure science—I wanted to know the facts and was irritated when the information was diluted with mythical, personal, or heroic interpretations. In Sunday conference with my mother I used to prefer straight Bible to a children's book of light conversational Bible-stories which she often used. Seldom since have I felt the same undiluted, intense scientific curiosity; in adolescence I was strongly utilitarian, and it is only in recent years that I have enjoyed the heroology of science and the mythical and poetical interpretations. But on the other hand my early interest never covered a science as a whole, but touched certain rather striking or mysterious elements such as comets and mastodons, which somehow became associated with strong ideas, feelings, and curiosity. As Dr. Hall says, the young child wants general information in abundance, but cares little for thoroughness or quantitative knowledge.

This early interest in things scientific I attribute largely to the careful instruction of my mother, who both kindled

and satisfied my curiosity, and did so with a supreme regard for objective truth. She showed me the world in a rational and a wholesome moral light, and far from crushing my imagination with cold facts, she rather stimulated me all the more to seek the truth about things. There must have been also an important inborn factor, for B, who received the same instruction, never developed the same deep, scientific interest, but inclined more to the poetic and mythical. I was going to say that she was more imaginative than I; but I cannot: the distinction is rather that she tended more to enjoy passively the myths created by others, like the average normal child; while I must rather create my own world of fancy to suit my personal tastes. Naturally enough, these tendencies were reinforced by my becoming conscious of my peculiar scientific interests, and taking a personal pride therein. I remember on one occasion, when I was about nine or ten, I had been arguing with my mother and sister. Being rather irritated by the viewpoint which my sister took, I closed the discussion by exclaiming rather angrily to mother: "Well, I'm scientific, and she's sentimental!" At the age of eight or nine I began to have strong religious doubts, which were caused not by any definite literature I had read, but by my own reasoning about the facts of life and failing to discover adequate rational sanctions for the beliefs I had been taught. But at the same time I prayed earnestly for the fears to be overcome.

From my more immediate environment I observed with intense interest the nature and operation of railroads, trolley cars, fire alarms, etc. Mr. Day, whose child-world resembled mine in many respects, had an imaginary line of railroad with accurately calculated time schedules. He published with greatest care and formality his play newspapers, as I published legal documents of the marriages of my play people. Like myself he was interested in the moon, in war, and in celebrations, which he embodied in his play. Mr. Day, I believe, took more material than did I from the real political and business world; he published news of industries, advertisements, fashions, stock markets, and battles, of which I took little notice. He also seemed to have been more patient in the little details—as in printing his newspapers; I was so impatient to express myself that I often flew into fits of anger because something refused to work out quickly and accurately the way I had imagined it.

Especially noticeable—and this one feature I have not known to be developed to a like extent in the experience of others—was my interest in objects which admitted of comparison and classification. My powers of discrimination and

comparison seemed to be developed early, and I took great delight in the contemplation of orderly series of unlike but related objects and phenomena. Thus I watched the moon with great interest, not because I saw any sentimental or mythical associations, but because of the mere pleasure of contemplating and reasoning out its changes in shape and position from night to night. Erie railroad trains were strongly differentiated from Lackawanna trains,—in fact I thought I could tell them apart by sound. Different types of locomotives were compared and given personal attributes; I used to imagine that camel-back engines were malicious, while the others were upright and good. I was very fond of time tables and maps, and knew by heart long lists of railroad stations along different lines leading out of New York. Various dolls, spools, or other characters of the play-world were compared most carefully as to strength and disposition, in fact I had a numerical scale to measure these dispositions. I used to make lists of the numbers of trolley cars observed, lists of cities visited, etc. The play-world was very distinctly and clearly divided up into the "systems," as noted above, and I took great pains to make clear to B any obscure points of classification.

This same delight in comparing and classifying showed itself later,—all through adolescence,—when I spent many days rambling alone over hill and woodland in search of flowers, trees, birds, and other objects of nature. Here also my chief delight was not to study intensively any definite phases of nature, but to list and contemplate the maximum number of species—to gather and compare the greatest variety of experience. I never made any extensive collections of the eggs, nests, or plants themselves, but made careful lists and descriptions each year of the various birds, trees, and flowers observed, which satisfied the desire as well. I keep up the practice yet with birds, listing about one hundred species every year. In nearly every case my practical interest in any phase of nature was preceded by some theoretical or book acquaintance with it. To-day I derive great pleasure from the mental comparison of persons and experiences. Every interesting experience, such as visiting a new city, climbing a mountain, or meeting a new friend, calls up hosts of clear visual images of similar experiences in the past, which are then compared and classified. I feel as if every such event added a new treasure to my mental collection. All this is probably an outgrowth of the collecting tendency, which is recognized as a specific instinct.

On the other hand I was non-receptive to many elements of life which, though they interested other children, could not

be brought in and connected up logically with my pre-established world. Everything must bear definite time, space, and causal relations to the whole, and anything non-conforming was either speedily connected, or forgotten. One evening B and I, in a spurt of imagination, created in our minds a whole new and strange system of play people called "Yucatown people" dwelling in a remote corner of our play-hall. I could not long stand for these disconnected spirits, so I constructed about a hundred crudely drawn paper figures. Then all these were placed against the end of some imaginary transmission line, and the spirits then poured into them, became embodied, and were assigned a place of residence next to the Spool people. Most of these people had been already named and characterized before they were embodied in paper. Most of the play systems of people originated thus as disconnected creations, and were then brought into relation with the rest of the world. In some cases familiar objects were personified; in other cases abstract personifications led to a search for or construction of appropriate objects to embody them. I remember one day playing "choo-choo cars" in a hammock with some other children at a country resort. It seems we started out from New York bound west, toward Chicago, and when one of the girls who was calling out the stations, after a while cried out "Boston," I objected strenuously that Boston was not on the way to Chicago but back in the other direction. She replied that we were only playing and it didn't make any difference, but it made a big difference to me and spoiled half the pleasure of the game.

As I have noted, all the subject matter originated in the more interesting elements of objective experience, such as the railroads, volcanoes, etc. These groups of ideas were now greatly elaborated and combined by the imagination into the many and varied phenomena of the play-world, fantastic indeed, but strictly logical. It was like a system of geometry built upon unreal premises, but conforming accurately throughout to the arbitrary conditions. Not contented with, or being unable fully to control the real world, I took the best parts of that world and on them built a play universe after my own sweet desire, just as an artist whose ideal is not satisfactorily expressed in nature, must embody it in a creation of his own. Further introspection shows a little more clearly just how the material was selected. Out of the total environment certain names, colors, pieces of music, objects, events, and general conceptions of things, for some unknown reason group together and set up mental complexes—we say they strike the child's fancy,—while other objects remain unnoticed. Most of the features of the play originate

in attempts to express these nameless complexes. I can certainly appreciate the word invention so well described in Una Hunt's book "Una Mary." The words like "mingy," "trando," "stowish," etc., were merely to represent certain complexes of feeling and ideas which we all have, but which we are never allowed to name because of our conventionalities of language. Children and poets now and then override custom and give expression to these mental states which are just as real as fear, arrogance, the sensation of clear mountain air, or any other state of mind. Of course the difficulty is that most of these complexes are individual. But in fact any word in good repute carries a more or less different meaning to every person. There are many unnamed impressions whose general elements are shared by many persons. Several of Una's playmates in "Una Mary" could agree very well in certain associations which gave rise to such words as "pliditrants," which stood for the idea of children alone out in the darkness, with all the mysterious and fascinating feelings associated. I coined a few words and gave unusual meanings to many standard words; and there were many other ideas which I never could name. "Queenishness," "fiercity," "Yucatown," "volcano," "current," are good examples. We shall see illustrations of this in what follows.

I shall now describe some of the "systems" and the events of the concrete play-world. B, like all girls, was brought up on dolls, of which she had very many. I had no very great interest in dolls and at first used to tease her about some of them, but soon I began to accompany her in her play with them, while she spent much of her time with my more masculine characters. I made a list of all her dolls and incorporated them, together with her other playthings, as the Doll System, which I assigned to her special care and protectorship. B and I were not calm spectators but active participants in the play events. We were of course the rulers of the universe, and our advice was sought by all the play people. We talked to these people as to intimate friends, we praised them for acts of righteousness, and the evil doers we rebuked or condemned to death. The play people were made to talk by our using several different tones of voice, deep tones for the men, soft tones for the adult women, and high, nasal tones for the dolls and other children.

"B. was regarded as the mother of the dolls and some mother or ancestor of the other parts of the Doll System. Joe (I) was the brother of B. and the father of the dolls. Papa and mamma were the grandfather and grandmother of the dolls. The Doll System is therefore more closely related to the Reapers than any other system." [Written at age 12.]

The dolls lived in B's nursery on the second floor of our home. They were frequently annoyed by the marauding visits of several blocks of wood called "Naughty persons," from the large play hall in the attic where all the other indoor people lived. So we made and published a law that "any little naughty person that comes from the hall shall be thrown in the waste-basket." My age at this time was eight.

The Spool people at first were a few miscellaneous "bears" and persons developed by the inconsistent imagination of early childhood. But my mind grew more logical, and when I was eight, these bears, etc., were passed through a dark room in which they suffered a "Great Change," all coming forth as humans. They were then divided up into families, and the small spools, though still retaining the traditional name of "Little Bears," were apportioned as children to the several families. The "Great Change" marked the close of primitive times and the dawn of national history for the Spool people. Against the wall we built a house of boards, four stories high, for the Spools to live in. Each family had its own room, and as I kept on collecting small empty spools from my mother, some of the families grew to enormous size, and had to be subdivided, and new families added. The fathers of the four principal families did not stay in the rooms with their wives and children, but stood always on the highest roof of the house, called the "Law Tower." They were the rulers and legislators of the system. Mr. Contractiven Raymond Rosebush was the chief of these—the "Head One" (president) of the Spool System. His wife Elizabeth Rosebush had a family of some hundred "little bears." Some of the other characters were the Russel family, Mrs. Russel being the educator of all the children of the community, the Atfern family, the Claus family, Oregon family, Ocotrin family, Bama Susie, Snowdrop, and four bachelor "doctors" who guarded the health of the Spools, and also of the whole play-world. Santa Claus, the father of the Claus family, was lost at an early age in the Spool history. Although we procured another spool to take his place and name, we were never satisfied, and for over a year we anxiously searched the house for the original. The adult spools were clothed with strips of paper or colored cloth wrapped around them and tied with string. The names were taken from real persons we knew, from fairy stories, or were manufactured directly according to childish fancy.

The Yucatownal System, which as I noted previously, was a sudden special creation later embodied and connected with the other people, consisted mostly of paper figures. Except when they were taken out for action, the Yucatownal families

were packed neatly in layers in a small box, each family separated from those above and below by sheets of paper. "Yucatown" was derived from Yucca, the name of a desert tree, a word which had struck my fancy while reading geography. One of the men was Mr. Cactus. It seems the creation of these persons was associated with a mental complex of weird and fascinating images awakened by the descriptions of desert vegetation. Ideas also of mysterious people and of fireworks were connected with this complex.

This system was a rich field for the creation of names. Some of its members were Mr. Bareten, Mr. Exquisitrin, Contac, Orungutanville, Apricot, Zerkamquisitburg, etc. With these paper people was associated one character of very different substance, Mr. Belity.

"This personage was a small bell about 3 inches in diameter without clapper or handle. He was supposed to be the strongest man of his size in the play-hall, and was the most important and conspicuous member of the Yucatownal System. . . . But he was not exclusively a Yucatownal person, and took part in many affairs other than those of his own system. He acted as a judge in trials and affairs of all systems, and he was well known and useful throughout the indoor play world." [Written age 14.]

Mr. Belity and Mr. Rosebush, the Head One of the Spool System, were the principal leaders—men of affairs—of the indoor part of the play-world. They consulted frequently with B and myself on questions of international (or inter-systemal, I ought to say) policy and government.

"The Yucatownal people were conspicuous for their being the seat of law in the play world. All trials, legal proceedings, etc., were usually attended to and judged by the famous Mr. Belity and his paper . . . associates, many of whom were jurors."

Marriages were performed by Mr. Belity, and then had to be confirmed by Mine Grasen, a distant imaginary volcano. We took great delight in conducting criminal trials, and in hearing the deep voice of Mr. Belity, with great formality, pronounce sentence upon the offender. This very often was followed by execution—another impressive ceremony. The method of punishment depended on whether the victim was made of paper, wood, or stone.

The Mystery System, also embodied in paper figures, was a weird aggregation of fairy-like people, animals, and moons, all of which had the unique power of aviation. Only rarely did they fly forth from their remote corner of the hall to take part in the busy affairs of the world. At the age of nine I had a memorable dream. The full moon yelled "O" at me in a loud voice, awaking me in great fear. This so impressed me that for several months I used to run around

yelling "O." Older persons were amused or annoyed and asked why I didn't yell some other letter of the alphabet for a change. I took up the suggestion immediately and began to shout H, Q, and other letters. No sooner done, than my mind began to build up complexes about the different letters of the alphabet, something like those of Mr. Day and "Una Mary," but not so well developed. The several letters were now divided up as symbols among the various play systems. The letters O, H, Q, C, I, R were the most dignified and important group and were associated first with the Moon, who was originally responsible for the whole business. Later they became the symbols, or totemic emblems for the more important systems—the Dolls, Spools, Yucatownals, and Mysteries. B G M N were given to the Daw System, V S T P to the Animals, and D E F L, the least important and dignified letters were given to the Pets—the completely feminine system. There were often disputes between systems for the possession of letters. Each system, like a political nation, had a flag, on which its letters and certain other emblems were placed. Each had also certain colors which were used in the flag. Colors were strongly associated with the systems, and the principal systems, like chosen races, shared the best colors, green and blue.

"Great emphasis rested on a person's favorite color. Green, blue, red, yellow, white, and pink is the order of the principal colors in respect to 'fiercity' [dignity or importance]. Green was the most dignified, noble, and important color; while pink indicated effeminacy and 'queenishness.' Thus the Pets favored pink, and the Yucatownals, Dolls, Spools, and Volcanoes liked green and blue."

"One day two female mysteries were questioned about their favorite color. They answered that pink was their favorite! The Mystery System and other persons assembled, the hall was darkened [by lowering a curtain], and a terrible silence prevailed. The ladies who had thus profaned the dignity of their system by saying they liked an effeminate color, pink, were sentenced to an awful doom. They were destroyed cruelly, with teeth and tools." [Written age 14.]

The indoor Pet System was composed of paper ladies cut from fashion magazines. They were kept in layers in a box. On the lowest floor, surrounded by delicate paper napkins, were the beautiful Queen and her sisters. On the topmost floor were the "Chase Ladies," stronger, Amazon-like women who had to carry on all wars in behalf of their system. In war they were invariably defeated. The Pets, unlike other systems, were exclusively female, and were the villains of the play-world. They alone retained a queen, much to the disgust of all the other systems, which long ago had given up their kings and queens and were now governed democratically by "head ones" or presidents. My early imagina-

tion revelled in stories of royalty, but about the age of eight I began to idealize the American type of government, and reconstructed my play-world accordingly. The origin of the Pet System was in certain "pets," in the ordinary sense of that word—meaning dependent favorites or protégés—kept by some of the Spool ladies and Dolls.

Right here I can best illustrate my childish ideals of character. In the earlier ages the contrast was between "nice people" and "naughty people." The wooden male Naughty persons who were sentenced to the waste basket for marauding the nursery and injuring the "nice" dolls were the typical villains of the early years of the play-world. About the age of nine these were changed to nice people and incorporated as the Daw system, with colors brown and letters B G M N. The word "Daw" was a transformation of the former title "Naughty." The Daw people became rather "silly" and good-natured, affectionate men, but never achieved great importance. Likewise the Animals, many of whom had previously been marauders and destroyers, now became the valiant protectors of the weak. Thereafter the majority of the evil doers were female—mostly the Pets, although in the very last stages of the play (age 11) there was a reversion to the masculine type of criminality. The contrast was now between two opposite types of character, "fiercity" and "queenishness."

"A queenish person was almost invariably a female, generally a Pet,—she was effeminate, perhaps proud and haughty, and something like a queen. She generally had a soft woman's voice, something like putting on airs and too elegant talk. . . . This queenishness was despised and punished. The fierce people were those who were manly and noble and good. . . . They talked in a voice which was deep and manlike in the case of the men, or ordinary woman-like in the case of the ladies. We had a sort of paper machine for measuring the degree of fiercity of any individual. It was something like a thermometer. The Pets . . . were between 5° and 20°. Zero fiercity was such an extreme degree of queenishness that no living person was supposed to be able to attain it. The Dolls and lady Spool people were mostly between 35° and 70°; the male Spools, Towers, and Yucatownals were 40° and up to 100° or more."

Volcanoes, which we shall speak of later, were fiercer than the most manly leaders of these systems, their fiercity running far up into hundreds of degrees. There were other character types neither very queenish nor very fierce. The "silly" type was represented by the Daws, the Spool doctors, and other men who were not deep voiced and dignified like the fiercer male leaders, but witty and good natured and tenor-voiced. They were the fun makers, the drones, often annoyers. Then there was the puerile, high nasal-voiced type

of the younger Dolls and Spools, and the female "silly" type of the De Petas, who, according to my earlier manuscript, "talked with their tongues half out" and had the habit of going down in the cellar to paddle their feet in milk.

In the backyard the out door Pets, made of stone, enjoyed a reputation similar to that of their indoor cousins. They were carefully arranged in rows in a little enclosure or "house." They too were the sole upholders of monarchy, the victims of war, and the perpetrators of crime.

The De Petas were paper girls indoors, and small stones out of doors. They were the young Pets, but revolted from that system and set up a democratic government of their own, under the leadership of "Lillie Fast Coach" and "Lillie Slow Coach." Hence they were classed as "nice" and did not suffer the same obloquy as their parent system. "While yet a young system the indoor De Petas waged war with the Tower people" [made of old chess men]. The De Peta army was lined up in front of the residence of the Yuca-townals. Mr. Belity, the great guardian of law and order in the play hall, being annoyed by the battle and feeling it his duty to stop it, marched forth, and taking scissors he cut off the head of "Lillie Fast Coach," the De Petas' general. The war ceased very suddenly, for my sister, whose sympathy was with the De Petas, became angry with Mr. Belity, and especially with me, who she knew was the prime mover of Mr. Belity's act. She refused to continue the game, and without her I never played with my people. I might lay plans and think over the affairs of the little world alone, but never was there any pleasure in actually playing without her sympathy and coöperation. This was one of the very few occasions in which we differed in regard to our people. At five or six I derived some satisfaction from imaginary companions, but at nine or ten the presence of B was a constant necessity for the operation of this concrete play-world. The beheaded general was soon pasted together again. In fact many of the paper characters were beheaded time and time again, and restored by pasting one more piece of paper on the rear. Thus some gradually acquired considerable thickness and strength, and others had themselves reinforced in this way for purposes of protection.

"Later on in our play, people who died were not supposed somehow to cease existence absolutely. It was very common for play people to be killed and get alive again in a short time. Oftentimes the time that the person should stay dead was appended to the death sentence. This is why death was inflicted so often for offences which seemed somewhat trivial."

Imprisonment was rare. Physical chastisement or mutilation were more common punishments for wooden people. In case of death sentence, which was usually the rule when the offender was a Pet, there were several methods of execution. Pets and other persons of low fiercity could be frightened to death by yelling O, H, Q and other letters at them, much as I was frightened in my dream. This was a purely psychical method and was convenient for trivial offences because it could be effected at a distance, and the dead one, having suffered no physical injury, could be resurrected any time we wished. Here my scientific conception of fiercity is well illustrated. Only persons of relatively low degree on the scale could be frightened to death, and the lower—the more queenish the person, the easier death could be effected. Again, the person who did the frightening must be relatively fierce—and the fiercer the executioner, the easier his task. Thus the volcanoes were usually called upon to perform this solemn duty. And furthermore, the letters yelled at the victim varied in their power to frighten, a deep, prolonged, mournful “O” being the most fatal, and H, Q, C, I, R in order being less fearful. In other words, the possibility of inflicting death by fright varied directly as the fiercity of the executioner, as the fear potency of the letters used, as the number of repetitions, loudness, etc., of the yelling, and inversely as the fiercity and general resisting power of the victim. I never as a child expressed it in this way, but I certainly had such a conception, and if I had known algebra at the time, would undoubtedly have formulated something like the above statement.

More serious crimes, however, such as injuring or annoying “nice” people, demanded physical destruction. Paper people were beheaded with scissors or hanged until the noose cut them in two. Wooden persons were broken and bruised. The most impressive and delightful form of execution was “mashing,” which was the out of door method for all stone criminals. The offender was placed on a traditional mashing block and was crushed by repeated strokes of a heavy iron. Sometimes he, or more usually she, was merely broken into a few smaller pieces which then became new personalities. For the worst crimes, however, the death sentence read “shall be mashed to powder,” and the grinding continued until the evil doer was thoroughly pulverized, and the soul thereof was banished entirely from the concrete world of play. If the stone was too hard to be broken by this iron, then we sent a hurry call for the Gondrondontharium—the chief of the Stone Animal System, weighing about twenty pounds; and he was dropped a few times upon the victim.

I remember one day taking all the yard play people by railroad out of their homes and assembling them to witness a mashing. After the execution there was so much trouble to put them all back in their places that I grew impatient and flew into a fit of anger. Stone people were sometimes poisoned to death by "mucitrin," a vile mixture of water, mud, and wood ashes, which we kept in a bottle. We had a row of several of these bottles filled with water and ground up chalk or stone of different colors, called the "colored water bottles." The powder of dead stone people scraped off the mashing block was used to make various medicines and concoctions.

In the yard we had also railroads, some of the male stone people making up a railroad company. I constructed a handsome little bridge of sticks, flat stones, and earth, and dug trenches in which I laid lines of twigs for telegraph wires. It was a rare treat to be allowed by mother to play with water, and one can well imagine the flooded rivers, volcanic eruptions, new chemical concoctions, and mud-stained clothes that resulted.

In my study of geography nothing so interested me as the descriptions of volcanoes and their eruptions. I was also greatly fascinated by fires and explosions, whether actually observed, or learned of indirectly. We lived two doors from the principal fire-house of the town, and almost in our back-yard stood the tower which carried a huge alarm bell, audible for two or three miles. I soon got to know all the alarms, and the bell made a sort of weird, half-fearful impression on me. It was not so much the horses and engines which interested me, as it is with so many boys, but the dismal sound of the bell—and the wondering where the fire was and whether it would be brilliant enough to see. I can recall being awakened at midnight by the chorus of all the fire bells in town, to find half the western sky filled with blaze, and hot coals showering down about us. This and similar experiences became associated into a complex of fear, wonder, and not a little positive delight, which is even to-day aroused in me by a night conflagration. As usual, these strongly feeling toned ideas expressed themselves in my play. I used to spend hours drawing pictures of Mount Vesuvius in eruption. I covered many sheets of paper with red fire, guns, murders, and dynamite. Again, I had a peculiar fascination for and interest in water-pipes, electric wires, and all kinds of long tubes and passageways; with thrills of pleasure I imagined the violent rush of water or electric current through them.

In the yard I heaped up a mound of earth, dug a crater

in the center, and named it Mount Vesuvius. Now and then an eruption took place, dirt and stones being thrown all over the yard. In the house of course I must have another Vesuvius—it was a large box of waste paper and other trash in the corner of the play hall. When an eruption was due, we darkened the hall, rolled the large wooden “thunder ball” up and down the floor; then Vesuvius poured forth its contents, knocking down the Spool people’s house and scattering the *débris* all over. Then mother would come upstairs to see what had happened; and B and I set to work to build up the house, collect the Spools, and with practically no error, put them all back in their proper families and rooms. In country places which we visited we called some of the nearby hills volcanoes, giving them such names as “Mine Grasen.” About the age of nine I made a grand synthesis of all these disconnected ideas about volcanoes, fires, etc., and called it the Volcanic System. The last two years of this play-world, which ceased at eleven, were marked by elaborate law and order. All the separate spontaneous creations of earlier childhood had been gradually unified into one great realm, and the Volcanic System was a sort of all-pervading metaphysical background which bound all things together and explained all phenomena. At home in the winter we missed the friendship of the Volcanoes we had lived near and talked to all summer. We communicated with them, and finally we began to dissociate the Volcanoes themselves from the material hills which represented them. Henceforth all volcanoes were purely imaginary spirits which could travel from place to place, and could inhabit any mountain, tree, pole, or piece of furniture at will. This was the first and only considerable departure from the concrete. B was too young to conceive of the Volcanoes just as I did, but I gave her diligent instruction, and we got along fairly well.

Once freed from their corporeal limitations, the Volcanoes became a rich field for imagination, and they rapidly increased in number, until I had so many purely imaginary beings that I had to classify them. Here my classifying fever exerted itself to the utmost. First there were the two Vesuvii, Mine Grasen, and other old friends. Then there were a host of Volcanoes associated only with numbers from 1 to 100, 100 to 1000, and then by thousands up to the millionth, and so on to the unheard of number Madrackkantillion. Then there were some which were lettered a, b, c, 2a, 2b, 2c, etc. Finally there were the Animal Volcanoes,—a great host of elephants, mastodons, dinotheriums, megatheriums, and all the other geologic animals I had so eagerly read about. But here as elsewhere, after the realm of scientific facts—even

pre-glacial facts,—is exhausted, still the childish imagination is unsatisfied, and has to extend the system by creations of its own. Thus I invented the Gondrondotherium, the most terrible of all nameable Volcanoes, and though he was a pure spirit, in blackest colors I drew his picture. (There was also a concrete stone Animal of the same name and characteristics.) Not content with the tabulation of these Volcanoes, I had to visualize their positions in a vertical circle, representing a sort of hierarchy arranged in order of fiercity. As we ascend the scale of Animal Volcanoes they become more and more terrible, their degree of fiercity far transcending the most dignified governors of the concrete systems. The Gondrondotherium was not the ultimate; just above him in rank was one so unspeakable that he was called the "Animal Without any Name," or for short, the "First Fiercity." There were twelve of these Animals without any Names, each one fiercer than the preceding. The highest one, called the "Twelfth Fiercity," was the supremely and ultimately terrible, the king of all Volcanoes, and a kind of god of the whole play-world. We never tried to represent him concretely, and seldom talked of him or communicated with him. The First Fiercity was the highest that could be pictured, and he was sketched as a jet black, almost shapeless animal with fiery eyes, sitting upright like the prehistoric megatherium.

I imagined a network of "currents" which were hollow pipes or tunnels running underground, through the beams of the house, and through railroad tracks and sidewalks. These served as lines of communication between different parts of the play-world, and also as passageways for fire, water, electricity, and as routes of travel for the spiritual Volcanoes. Through the currents flowed periodic "rushes" of electricity, which rang fire bells, blew whistles, or if the pressure were too high, caused "current-bursts" and fires. Three or four hundred "Curreworrelus Volcanoes" were employed to travel about and keep the currents in good repair and attend to "bursts" and fires. Evidently these ideas were a fusion of crude hydraulic and electric notions. I had a schedule of fire alarms for different parts of the play-world. Just before supper occurred "negetal time," which was rung out on a dinner bell supposedly by the current mechanism. The word was derived from portions of three words, "no," "get," "alive." It meant that any play people who had died or been killed during the day could not be restored to life after the ringing of this signal; they must wait until next morning. Frequently we recorded the accuracy of our supper time, which was supposed always to be ready twelve

minutes after negetal time. Wednesday was the most active day of the week for the currents and Volcanoes; the pressure was then the highest, and fires and explosions most frequent.

Illustrative of the conception I developed of my play-world during its later history (age 10-11), one of the paragraphs in my 13-year old manuscript is headed "Advanced science of the play people." It describes their methods of punishment, their life, death, and character, and is explained with this Volcanic System as a basis. The Volcanic System was in a sense the religion and philosophy together of the play-world. The imaginary frightful, Animal Volcanoes certainly correspond in character to primitive gods. All play people who had been entirely destroyed were vaguely conceived of as dwelling among the world of Volcanoes. No doubt these ideas were due to a combination of religious teaching with a desire to construct a logical system. The volcanic spirits were positively known about, and even communicated with, by the play people. It resembles perhaps a religion which would be developed by savages. It embodied chiefly wonder and fear—but the play people, not myself, were the subjects of those feelings. Religious love, ecstasy, reverence, or piety did not exist in this connection. The play bore no relation to my real religion which was associated wholly with my real life. The words God, devil, heaven, hell, etc., were never used or thought of in connection with play.

I have already traced the evolution of this play-world. The general process was in most cases first an idea taken from experience; second, an association of ideas and feelings into complexes; third, the expression and further elaboration of these complexes of ideas by play creations; fourth, the synthesis of all these separate creations into a consistent play-world. At first I demanded concrete representations for everything, later I began to revel in pure imagination.

In the summer just before I was eleven

"Mr. Bamahead, a foolish and naughty member of the Tower System, had in our imagination done some misdeed; and we planned to punish him when we should return home. Accordingly, upon our arrival, we destroyed the unruly Mr. Bamahead in the upper hall. His end was also the end of the whole complicated thing. Interest in our play people declined, for I had now reached the age of eleven, when it was best I should give up these childish things." [Written at age 14.]

The same autumn marked my entrance into high school, and our change of residence to the city nearby. Our play people were taken along as relics, or otherwise disposed of. The whole host of paper people, instead of being carelessly thrown away, were formally beheaded, one by one.

"If we had moved a year or two earlier, I would have insisted upon taking along every stone of importance in the back yard. Thus ended our play. To-day there still exist the numerous spools, towers, etc., but they are no longer endowed with life. Once they seemed like living creatures, but now only like pieces of wood." [Conclusion of manuscript—at age 14.]

My imagination at times cultivated other fields besides this play-world. I cared not much for fairy stories or novels: I wanted to create my own stories and myths to suit myself. My reading was chiefly scientific—to satisfy my curiosity. B, however, was more receptive toward the creations of others; so we made an ideal combination. I would make up the stories and tell them to her, being very careful to explain in detail all the when, where, and why, of which most children's story writers are rather careless. I wanted her to see the picture which was clearly visualized in my own mind. She would listen and enjoy, and perhaps ask questions, which I took great delight in answering. Besides my concrete play-world in the house and backyard, I had another universe existing wholly in imagination, which was the setting for hours of personal reverie, map and picture drawing, and telling of tales to B, during the times when we could not or were tired of playing with our people. This world was entirely separate, except for certain names common to both, from the concrete world. But it also was a logical unit, and most all the varied stories I told were finally located geographically in this story-universe. I have drawn several maps of it. Like the rest of my play, it was the real world modified to suit my tastes: it was based on a crude map of the United States; with New York, Chicago, and Buffalo fairly well located, but all the intervening country distorted, reconstructed and given imaginary names. The principal city of this realm was not New York, but a nearby town which was identified with our actual home, and was the home of the heroes of all the stories. These heroes were usually B and myself. Like the play-world, this story world had color elements. Midway between New York and Chicago was the important and mysterious city of "Greeniarten." This was the destination of the "Greeniarten Special," a very fast and green colored express train which left New York about 6 A. M., and made its trip west in about twelve hours. On this splendid train ourselves in the story were wont to travel. Next in importance and farther east was Bluetown, then Redville, Pinkville, Whiteville, etc. In this ideal geography there took place railroad wrecks, great fires, volcanic eruptions, crimes, and also peaceful journeys and visits by the heroes. Kings and queens from other countries sometimes

visited us, who were the democratic rulers of this country. All such journeys, however, were narrated so as to be consistent with the railroad schedules and the distance between the places in question. The most active imagery centered about the railroads. Some years after I had outgrown the concrete play, I was still mapping the cities and sketching the railroad trains of this realm. Even to-day in spare moments I sometimes imagine myself riding through that mysterious country.

We had a large play house in the yard, containing an express wagon, the Stone people, etc. At the time I was interested in physiology, we sometimes suspended our usual activities and made believe this house was a person. Several boxes, cans, pails, etc., were then placed inside in proper position to represent the different bodily organs, stomach, lungs, heart, liver, spleen, kidneys, etc. Then we would play disease, and would have to operate on the house and remove one of its organs. The favorite disease was some mysterious, incurable malady called "constintibus," which had its seat in the spleen, a gland of mystery, for I had searched many text-books and encyclopedias to learn about its poorly understood function. Doctors were summoned, and if after an examination they gave with bated breath the verdict "constintibus," we knew the result was inevitable. The disease progressed rapidly and always culminated in a fatal explosion (*i. e.*, a general "roughhouse"), which wrecked the whole organism, as we with much yelling and delightful violence threw its various entrails all over the yard. In the house we sometimes mapped out the human anatomy on the floor with lines of cards, the careful arrangement being soon shuffled up violently by disease. We also constructed a human body out of a paper envelope with the various organs sewed or pasted in position inside.

We do not wholly lose our childhood. Many of these childish interests and ideas have not been destroyed or even greatly lessened in my own mind. They are merely transformed, or are overshadowed by the more pressing interests of later practical life. The tendency to personify objects grows less, but possibly only because the desire for companionship and the personal interest are satisfied by one's much wider acquaintance with real persons. Many of the old complexes persist with the same intensity. I still have a peculiar interest in railroads and feel certain undefinable thrills when I am traveling. I watch the changes of the moon with much of the old interest. Occasionally my mind returns to the land of stories.

These childhood fancies certainly resemble dreams and cor-

respond to racial myths. Parts of my play were created in dreams, and like them, represent a kind of ideal or wished for state of affairs. My own play, as I have noted, was marked by unusual loyalty to science, facts, and logical arrangement. I do not, however, consider it as an exception to any essential psychogenetic principles. Variations are matters of individual interest. Due to heredity, and very largely to education, I developed at an early age an intense matter of fact curiosity about things. But though precocious in my mental grasp of impersonal things and hence far ahead in school, I was somewhat backward in perceiving the intricacies of human nature and in adapting myself to social situations. Yet I had animism in abundance—it was, however, an original imaginary creation upon facts, and clearly differentiated from facts, except in the early years before six. It was not a passive acceptance of the fairy tales of others. It never prevented me from knowing and seeking the truth: the cold, scientific facts themselves carried just as pleasing complexes to me as myths carry to children educated otherwise. To me truth was much more wonderful than the fiction invented by others, but my own fiction was better still.

There seems to me only one essential reason why, for example, the knowledge that the stars are tremendously distant, immense suns should give any less satisfaction to a child than the idea that they are bubbles or diamonds or gods. It must be either because the child inherits a racial predilection for bubbles, diamonds, gods, etc., or because his previous education has built up pleasing complexes about such things, and relatively unpleasant or indifferent associations with distant suns, earths, or stones. Since education is subject to control anyway, the only essential point seems to be that the child needs a conception of things to harmonize with his state of mental evolution. And the main characteristic of this, for our purposes, is the need of animistic rather than impersonal conceptions. The young mind, like the savage, ascribes all motion to persons, and sees the world as a reflection of himself. But why preserve this conception to the exclusion of all others? My own case suggests how all the joys and genetic functions of animism may coexist with an early understanding of reality. Why not always satisfy the child's curiosity by telling him the truth, but presenting the truth amid a wealth of suggested associations, both mythical and scientific, so as to give free play to all types of imagination? The child would then be free to seek mere myths, or to create his own myths, or to inquire further into cold facts, according to his disposition. Such a method would offer a much wider field for the child's interest and pursuit

of what is worth while than impossible tales that can never lead him any farther except into greater error. He would thus begin early to appreciate truth as truth, and fiction as fiction, and would not fall into errors soon to be dispelled with a shock.

How prevalent are these early misconceptions is shown by a question put to 553 school children by Miriam B. Levy: "How did the man get in the moon?" The ages ranged from four to fourteen, the bulk being between eight and twelve. Only 48 answered that there was no man there, although perhaps we must allow for the suggestive force of the question. Fifty attempted a scientific explanation, while the remaining 457 gave crude arbitrary explanations or failed altogether. There is little evidence that these 457 false notions were sources of any great joy or interest-incentive to the children.

The childhood I have described suggests many important questions. What are the relative weights of heredity and of early education in determining the bent of a child's mind? The comparisons made between B and myself certainly seem to point to strong inborn factors—but even there the evidence is not conclusive, because two children can never have exactly the same environment, and a slight turn one way or another in the earliest years may determine the whole future course. Again, is it wiser to encourage a child's free mingling with many others at an early age, developing his social qualities and adaptability, or to encourage a certain degree of aloofness and self-reliance, thus giving play to individuality and independent creative thinking? Or does the child himself by his inborn traits determine which course shall be pursued?

I have described only a portion of the great world of ideas and activities which made up my childhood. I feel that its memories will always enrich my life, and I congratulate those who are so fortunate as to have similar vivid recollections. Studies of this kind, I believe, give a deeper insight into the child mind, and a greater sympathy with the inner life of other people in general.

A CHILD'S VOCABULARY AND ITS GROWTH

By JAMES RICHARD GRANT, University of Arkansas

There has been a great deal written on the vocabulary of children, yet the average teacher or parent greatly underestimates the average child's vocabulary. One hundred teachers were recently asked to estimate the number of words a child could use intelligently at the ages of one year, two years, etc., up to the age of six. It is interesting to see how few words a child is supposed to know. The maximum and the minimum of the estimates with the average of all are as follows:

1	year old,	0-50,	average	12;	4	years old,	20-1500,	average	222
2	"	"	4-200,	"	59;	5	"	"	312
3	"	"	10-1000,	"	135;	6	"	"	472

The estimates of the same number of parents were even lower on the average.

These estimates are not so far from the true average as the tables on pages 191 and 192 would indicate. There are very few vocabularies recorded by anyone except parents. Most of the children are from homes above the average. Again, not many parents will publish a record of the child's vocabulary unless it seems to be above the average. We know two-year-old children who say very few words. Dr. W. F. Jones, of the University of South Dakota, has made an extensive study of the writing vocabulary of 150 children from each grade beginning with the second and including the eighth. He, with the aid of others, read more than fifty written lessons, essays, etc., from each of the 1,050 children taken from four states. After handling more than 15,000,000 words, Dr. Jones arrives at the following conclusions. The average second-grade child has a writing vocabulary of 1,927 words. The gain of each grade over the preceding was as follows: 3d, 469; 4th, 442; 5th, 432; 6th, 425; 7th, 469; 8th, 418.

BIOGRAPHY

Bertie Elizabeth Grant was born in Greenwood, Arkansas, April 15, 1912. Her parents are of Scotch-Irish descent. Both are university graduates and teachers. Her mother taught until four months before Elizabeth's birth. With the exception of one attack of croup and a light siege of mumps,

E does not know what it is to be ill. Her health is due to watchful care as well as to inheritance. She has an excellent physique, and at times her parents feel that she has more strength, energy, and initiative than are conducive to the welfare of all concerned.

She has lived in an environment that is hardly normal. She is twenty-six months old and has traveled approximately 4,000 miles. Half of this took place, however, before she was five months old. She has had no regular associates except her parents. Being the only child, she has naturally been with one of them almost continuously. E is a great lover of nature. She enjoys gathering flowers, watching bugs and birds, collecting little rocks, etc., for hours at a time. She is happiest, however, when in the company of little children.

She climbs upon the piano stool and sits for half an hour at a time striking the keys. She says she is "playing Mother a song." She will stand at the window and listen, all but motionless, to any musical instrument that a neighbor may be playing. From her first birthday she has kept time to music or any rhythmical sound with her whole body, and now she often dances to music that "demands" it. This was never taught her.

E stood alone the day before she was ten months old and began walking about two months later. By the time she was two years old she could put on her shoes and button them. When she first learned this she often unbuttoned them just for the fun of rebuttoning them. She could put on most of her clothes and button any of them that buttoned in front. She used the scissors fairly well to cut both paper and cloth. One of her chief delights is to get a needle and thread and "sew scraps." She has fed herself since she was twenty-two months old. She is now old enough so that she often wants to help her mother "make up the bed," "wash dishes," "sift flour," etc.

VOCABULARY

Method of Securing Data

From the time E began to talk her words have been taken down daily. No word has been put down until E used it intelligently of her own accord. There has been no special effort to teach her new words. This method is subject to inaccuracies because (1) her parents could not be with her all the time; (2) while in the presence of strangers E did not talk much, though we could not say that she was learning no new words. But these inaccuracies have been met in part (1) by close observation after E had been neglected;

(2) by studying the vocabularies of other children and testing E on words she had not used.

Tables and Curves

In arranging the tables and curves presented below very little originality is claimed. The information collected by others has been rearranged and used. Special credit is due Pelsma (27) and others for a great deal of the information found in the comparative table of vocabularies. Curve III is accurate for about 20,000 words taken from an abridged dictionary.

The similarity between Curves II and III is very marked. The general shape is the same. The words beginning with *s* stand highest in each curve and those with *x* at the bottom. When E was eighteen months old her parents, seeing from Kirkpatrick, Mateer, and others that *s*-words usually headed the list, predicted that this would not be so in E's case. She had much trouble pronouncing them; *e.g.*, she called "smoke" *poke*, "smell" *pell*, etc. The only reason that sounds logical for *s*-words standing highest is that there are more of them. There are some differences in the two curves. This would naturally be expected. But if all the words in the language were represented in the curve, it might be changed. It would be interesting to get a graph of the words in the language by parts of speech and compare it with the graph on page 190. But most words can be used in so many ways that such a graph was found all but impossible. The graph shows the words as E used them.

The general shape of Curve IV, showing the number of words E learned each month, is a steady rise. It will be observed that there is no plateau, but there is a falling off in some months and a great rise in others. This can be explained in part, at least, (1) by difference in E's environment; (2) by the difference in opportunity that her parents had for getting each new word that was used. Her vocabulary grew slowly but gradually until she was nineteen months old. In her twentieth month she learned as many words as she had during the three months preceding. When E was nineteen months old she knew about 160 isolated words. It is at this time that she begins to put them together. She got so much pleasure in "talking" that she tried to say something about everything she saw. Her parents, too, enjoyed the talking to such an extent that but few, if any, words were missed. But why is there a falling off in the next month? This cannot be explained by reason (1) or (2) as given above. But the "new" had worn off, and probably E was less jubilant and did not care to use her newly acquired means of com-

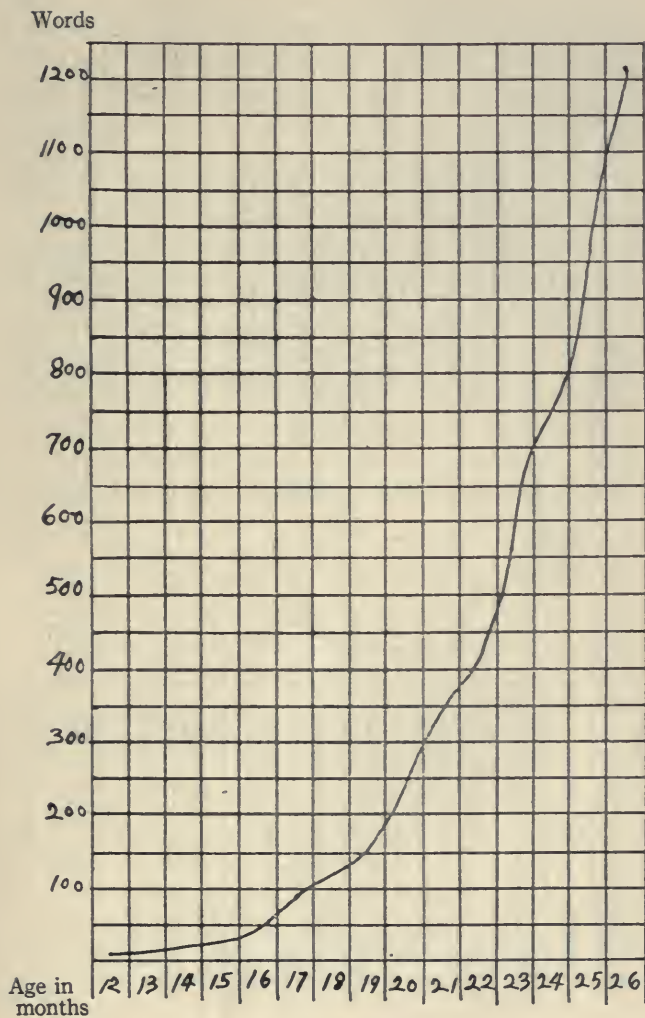
munication so much. Again, her parents may not have been listening so attentively for "the next new word."

In her twenty-second and twenty-third months E's record runs high. The weather was very cold and snowy during these two months and she stayed in the house most of the time. This gave one of her parents a chance to be with her almost constantly. Since she could not play out of doors, talking formed a great part of her entertainment and many new words were learned.

The next two months, the twenty-fourth and twenty-fifth, are off months for E. A great part of the time E and her mother were visiting relatives. "Taking down words" requires a little more energy, patience, and perseverance than one might think. While visiting, E was away from her mother a great deal. It was also easy to let words go for three or four days before putting any down. Thus some were forgotten. Again, in the presence of strangers E did not talk so much as she did at home.

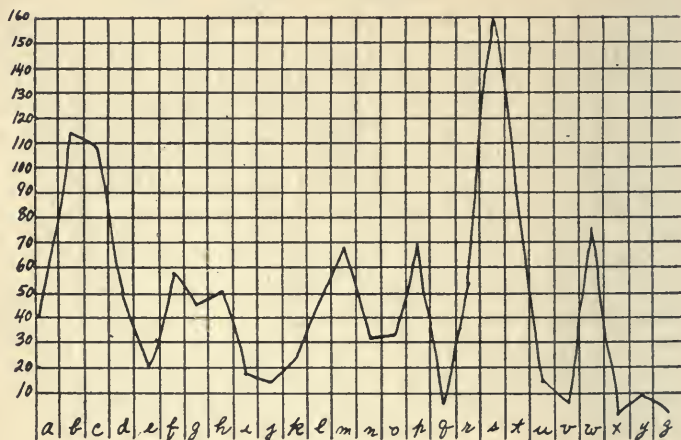
The record for the twenty-sixth month shows that E learned 264 words. Some of these were learned previous to that month. This being the last month for her final record, she was tried on doubtful words that were found in the vocabularies of other children. Thirty-one words were added in this way. Since it was not known where these properly belonged, they were put in the list for the twenty-sixth month. This close observation for new words during the twenty-sixth month is already having its effect on E's record for her twenty-seventh month, which is half gone with only 73 new words thus far.

There could be much said regarding Table I. E's vocabulary is made up of 50 per cent nouns. By referring to the comparative table of vocabularies it will be seen that most vocabularies are made up of even more than 50 per cent of nouns. In general, the proportion of nouns to the entire vocabulary decreases as the vocabulary increases, and the proportion of verbs increases accordingly. In E's twenty-fourth month the nouns increase because she was visiting and learned twenty-three proper nouns.



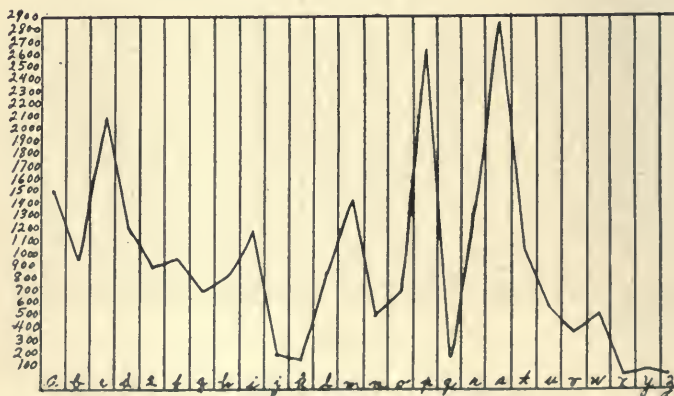
CURVE I

Learning curve, showing growth of vocabulary



CURVE II

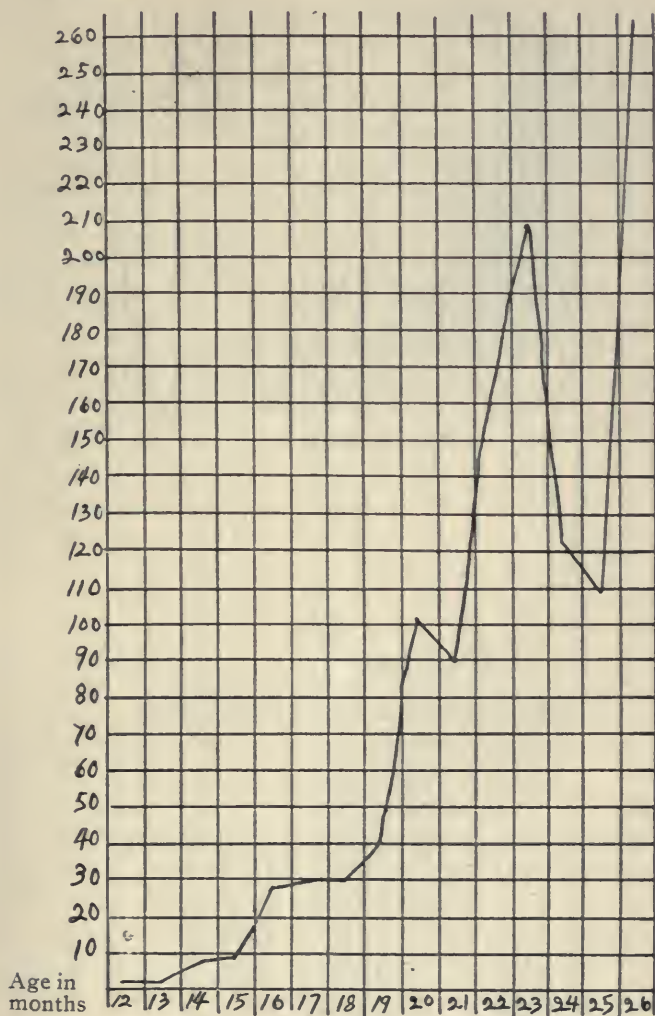
Number of words learned beginning with a, b, c, etc.



CURVE III

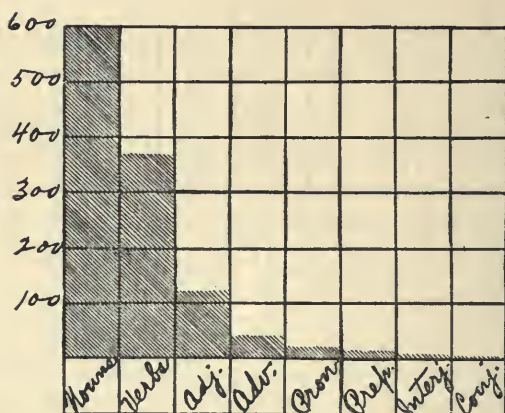
Number of words in an abridged dictionary beginning with a, b, c, etc.

Words



CURVE IV

Number of words learned each month



Total number of nouns, verbs, etc.

TABLE I

Number of nouns, verbs, etc., learned each month

	Age in Months																Total
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
Nouns..	2	2	4	5	19	24	24	30	68	67	81	76	66	37	103	608	
Verbs...	..	1	1	1	4	1	3	7	26	16	54	81	37	42	97	371	
Adjs....	..	..	1	2	1	4	..	3	6	7	14	27	11	18	34	128	
Advs...	1	..	..	..	1	..	3	1	..	..	10	10	2	4	10	42	
Prons...	..	..	..	..	2	..	..	..	..	..	..	5	1	4	12	24	
Preps...	..	..	..	..	..	..	..	..	..	..	..	6	4	2	5	17	
Interjs..	..	..	..	..	..	1	..	..	1	..	2	1	..	2	..	7	
Conjs...	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	4	
Total.	3	3	6	8	27	30	30	41	101	90	161	207	121	109	264	1201	

TABLE II

Comparative table of vocabularies

Authority	Ref.	Age of Child	Total No. of Words	Nouns	Verbs	Adjs.	Adverbs	Pronouns	Preps.	Conjs.	Interjs.
Grant.....	..	12m. G.	3	2	..	..	1	..	..	..	..
Hall.....	13	12m. B.	24	19	2	..	..	..	..	..	3
Mickens....	24	12m. G.	3	2	..	..	..	..	..	..	1
Moore.....	25	12m. B.	6	6	..	..	..	..	..	..	..
Pelsma.....	27	12m. G.	10	7	1	..	2	..	..	..	..
Perez.....	45	12m. B.	10	6	2	2	..	..	..	..	..
Tracy.....	36	12m.	10	6	..	2	2	..	..	..	..
".....	"	12m. B.	8	7	..	..	1	..	..	..	..
Grant.....	..	13m. G.	6	4	1	..	1	..	..	..	..
Hall.....	13	13m. B.	38	30	3	1	..	..	..	..	4
Grant.....	..	14m. G.	12	8	2	1	1	..	..	..	..
Hall.....	13	14m. B.	58	44	6	3	1	..	..	..	4
Mickens....	24	14m. G.	15	13	..	..	1	..	..	..	1
Grant.....	..	15m. G.	20	13	3	3	1	..	..	..	..
Hall.....	13	15m. B.	106	84	8	7	3	..	..	..	4
Mickens....	24	15m. G.	27	21	..	3	2	..	..	..	1
Grant.....	..	16m. G.	47	32	7	4	2	2	..	..	..
Hall.....	13	16m. B.	199	141	28	17	5	2	1	1	4
Jegi.....	17	16m. G.	75	50	13	3	4	..	..	1	4
Mickens....	24	16m. G.	44	36	1	4	2	..	..	..	1
Grant.....	..	17m. G.	77	56	8	8	2	2	..	..	1
Hall.....	13	17m. B.	232	156	37	20	5	3	5	1	5
Mickens....	24	17m. G.	77	66	4	4	2	..	..	..	1
Tracy.....	36	17m. G.	35	22	4	2	4	..	..	..	3
Dewey.....	8	18m. G.	144	76	41	2	9	9	..	..	7
Grant.....	..	18m. G.	107	80	11	8	5	2	..	..	1
Jegi.....	17	18m. B.	60	36	16	3	3	..	..	..	2
Mickens....	24	18m. G.	116	97	9	7	2	..	..	..	1
Watson....	11	18m. G.	74	57	3	6	2	..	..	..	6
Dewey.....	8	19m. B.	115	69	24	13	3	..	..	..	6
Grant.....	..	19m. G.	148	110	18	11	6	2	..	..	1
Mickens....	24	19m. G.	142	111	19	8	3	..	..	..	1
Grant.....	..	20m. G.	249	178	44	17	6	2	..	..	2
Mickens....	24	20m. G.	187	139	24	16	4	1	2	..	1
Grant.....	..	21m. G.	339	245	60	24	6	2	..	..	2
Mickens....	24	21m. G.	216	150	22	20	5	1	2	..	10
Tracy.....	36	21m. G.	177	148	14	6	5	2	..	..	2
Grant.....	..	22m. G.	500	326	114	38	16	2	..	..	4
Mickens....	24	22m. G.	221	185	49	27	11	2	4	1	2
Tracy.....	36	22m. G.	69	37	9	4	8	1	..	..	1
".....	"	22m. G.	27	16	3	3	2	..	..	..	1
Grant.....	..	23m. G.	707	402	195	65	26	7	6	1	5
Mickens....	24	23m. G.	352	226	70	31	15	3	4	1	2
Tracy.....	36	23m. G.	136	95	16	12	7	3	..	1	2
Gale.....	10	2yr. G.	436	232	99	49	27	12	8	1	8
".....	"	2yr. B.	115	69	17	17	8	..	2	1	1
".....	"	2yr. G.	578	293	129	70	38	27	13	6	2

TABLE II—*Concluded**Comparative table of vocabularies*

Authority	Ref.	Age of Child	Total No. of Words	Nouns	Verbs	Adjs.	Adverbs	Pronouns	Preps.	Conjs.	Interjs.
Gale	10	2yr. G.	400	247	82	36	23	4	4	..	4
"	"	2yr. B.	729	417	171	68	36	10	9	..	17
"	"	2yr. G.	741	395	159	97	27	11	4	..	49
"	"	2yr. G.	783	555	103	20	27	12	4	..	12
Grant	..	2yr. G.	828	468	232	76	28	8	10	1	5
Heilig	14	2yr. G.	455	..	..	..	..	..	..	..	..
Holden	15	2yr. G.	483	285	107	34	29	Mis	cella	n'us	28
Humphreys ..	16	2yr. G.	1121	592	282	113	56	35	28	6	9
Jegi	17	2yr. G.	1227	727	238	139	54	21	24	4	20
Mickens....	24	2yr. G.	427	256	94	40	24	6	4	1	2
Moore	25	2yr. B.	475	306	92	38	14	11	Mis	cl's	14
Pelsma	27	2yr. G.	379	212	88	37	21	8	6	1	6
Tracy	36	2yr. G.	263	168	52	22	7	7	4	..	3
Grant	..	25m. G.	937	505	274	94	32	12	12	1	7
Mickens....	24	25m. G.	507	302	101	53	33	8	6	2	2
Tracy	36	25m. G.	250	196	28	15	5	3	3	..	..
Grant	..	26m. G.	1201	608	371	128	42	24	17	4	7
Mickens....	24	26m. G.	587	335	121	60	47	11	8	2	3
"	"	27m. G.	675	382	139	66	62	11	9	2	4
Tracy	36	27m. G.	171	113	27	16	10	2	1	1	1
"	"	28m. B.	677	422	136	69	23	9	12	2	4
Gale	11	30m. G.	769	444	149	103	30	19	11	5	8
"	"	30m. G.	1509	913	310	157	61	16	16	..	36
"	"	30m. B.	1432	797	310	154	75	33	25	10	28
Heilig	14	30m. G.	1111	..	..	..	..	..	..	..	..
Tracy	36	30m. B.	327	132	87	42	31	18	12	3	2
Watson	11	30m. B.	480	257	124	50	21	10	10	6	2
Boyd	3	3yr. G.	1657	918	344	200	109	30	29	21	6
Bush	5	3yr. G.	1944	1042	506	214	75	50	33	11	14
Gale	10	3yr. G.	1176	675	238	143	53	33	17	7	10
Heilig	14	3yr. G.	2153	..	..	..	..	..	..	..	..
Pelsma	27	3yr. G.	681	406	147	65	31	14	9	1	8
Whipple	39	3yr. B.	1771	993	391	209	89	33	24	8	24
Kirkpatrick ..	20	46m.	685	108	217	49	94	186	19	5	27
Mateer	23	4yr. B.	1020	578	211	125	51	21	4	12	18
Pelsma	27	4yr. G.	1278	730	265	135	86	23	19	5	15
Rowe	28	4yr.	2346	1207	679	268	107	23	24	9	19
"	"	6yr.	3950	1900	949	400	137	26	26	11	21

Detailed Vocabulary

There seems to be no standard as to what words shall be included in vocabularies of children and what words shall be excluded. In E's vocabulary all plurals have been excluded except those that are irregular or those learned before the singular form. Up to the present all verb forms are included. This has been done in most vocabularies of two-year-old children. The reason is both psychological and grammatical. The sixty-four proper nouns have been included. All words used only in songs and Mother Goose rhymes have been excluded. E has some expressions that may well be called interjections, but these have been left out. She also has a few "bywords" that have been left out. A child's vocabulary so portrays home life that in some ways it seems best to reduce it to the minimum.

VOCABULARY BY MONTHS

Twelfth Month

Nouns—2:—baby, bye bye.

Adverbs—1:—now.

Thirteenth Month

Nouns—2:—hat, howdy.

Verbs—1:—go.

Fourteenth Month

Nouns—4:—bread, cup, milk, spoon.

Verbs—1:—come.

Adjectives—1:—more.

Fifteenth Month

Nouns—5:—cap, cracker, dinner, dog, supper.

Verbs—1:—eat.

Adjectives—2:—black, good.

Sixteenth Month

Nouns—19:—Annie, apple, bell, Bertie, boy, comb, dress, egg, flower, hand, horse, juice, minute, mouth, "ogy," paper, peach, pin, shoes.

Verbs—4:—peep, please, thank, want.

Adjectives—1:—hungry.

Adverbs—1:—on.

Pronouns—2:—it, you.

Seventeenth Month

Nouns—24:—bib, bottle, button, buttoner, chair, chicken, Daddy, ear, eye, foot, forehead, hair, handkerchief, lady, medicine, mother, no, nose, 'phone, pocket, scissors, tick tick, umbrella, wee wee.

Verbs—1:—ring.

Adjectives—4:—clean, dirty, hot, pretty.

Interjections—1:—whoa.

Eighteenth Month

Nouns—24:—ball, bed, book, buggy, broom, brush, butter, chin, "choo choo," cream of wheat, Dan, doll, drink, feather, gloves, knife, light, mule, pencil, pick, spool, supporters, teeth, yes.

Verbs—3:—do, gone, stick.

Adverbs—3:—down, off, up.

Nineteenth Month

Nouns—30:—bath, beard, Bess, Blanche, bucket, cow, darner, door, drawers, face, Gallaway, girl, glasses, gown, kitty, lap, mama, nail, neck, needle, "nighty," pillow, proboscis, school, shirt, soap, stove, train, trees, window.

Verbs—7:—don't, get, kiss, read, tickle, tuck, visit.

Adjectives—3:—cold, greasy, naughty.

Adverbs—1:—through.

Twentieth Month

Nouns—68:—acorn, Addie, apron, ashes, back, beads, birds, block, brow, cheek, church, clothes, coat, collar, cornflakes, cover, cuffs, dishes, dust, feet, finger, flag, hammer, heel, hole, honk honk, jelly, key, knee, leg, letter, lip, mill, mirror, money, music, nap, napkin, necklace, piece, pitcher, potato, powder, rag, rice, robe, rock, Ruth, shoulder, shovel, skirt, smoke, somebody, sore, string, tail, thimble, thread, tie, toe, towel, town, trousers, trunk, tub, wagon, water, wood.

Verbs—26:—bark, blow, break, broke, build, button, cut, fasten, fix, fly, ironing, mail, open, pinch, play, pull, raining, run, scrape, sew, sharpen, sing, sleeping, spill, swing, wash.

Adjectives—6:—cool, nice, one, other, wet, windy.

Interjections—1:—boo.

Twenty-first Month

Nouns—67:—arm, belt, Bennie, "bile," bobbin, "booggar," bridge, buckle, chain, chamber, children, crumbs, dirt, dollar, elbow, Elizabeth, file, finger, flapper, floor, furs, George, handle, hominy, hone, ink, Kewpie, laundry, laundry-man, leaves, measure, mess, muff, nabisco, name, navel, noggin, nuts, pan, pen, pillowcase, plenty, poker, porch, postman, quilt, razor, rompers, room, rubber, sash, saucer, seed, sheet, something, stamps, stomach, sunshine, supper, table, tennis-racket, toast, vase, waist, watch, whistle, wrist.

Verbs—16:—fall, fit, hide, hug, knock, shake, shut, sit, smell, sneeze, spit, stand, sweep, tie, walk, write.

Adjectives—7:—heavy, muddy, red, rough, sticky, tight, well.

Twenty-second Month

Nouns—81:—Auntie, Bible, bite, bracelet, cake, card, carpet, charm, clock, come, corn, corner, counterpane, custard, dimple, dining-room, dresser, drum, Effie, enough, eye-shade, father, garter, good-night, Grant, grocery man, hairpin, hen, high-chair, hip, house, Jim, kimono, kindling, knuckle, lashes, lather, machine, map, miss, molasses, Mrs., Muffin, orange, overcoat, patch, peeling, peep-eye, penny, picture, plate, prunes, rabbit, reading, ring, rocking-chair, rubbers, rug, Rush, salt, shadow, shoebottomer, side, sleeves, snow, soup, stick, stopper, sugar, tangles, tie, toilet-room, tooth-pick, trash, tune, vest, walk, wall, window-shade, words, wrap.

Verbs—54:—bite, bump, carry, catch, choke, clean, coming, combing, cook, cough, crochet, cry, drink, drinking, drop, fell, find, fold, got, hand, hang, have, hear, help, hold, hurt, jump, kick, love, make, mash, move, pat, pick, reach, ride, riding, rock, roll, running, scratch, shave, spank, stop, study, take, undone, walking, warm, wear, wink, wipe, wrap, you're.

Adjectives—14:—bad, busy, "comfy," full, hard, last, poor, ready, sick, sleepy, smooth, sweet, tired, welcome.

Adverbs—10:—away, back, here, in, out, over, so, soon, there, too.

Interjections—2:—oh, 'scat.

Twenty-third Month

Nouns—76:—Adeline, Arkansas, basket, bit, blanket, blotter, closet, clown, cushion, Davis, drawer, finger-nail, fire, fire-place, fountain-pen, garden, good-bye, ground, hello, hook, Indian, iron, James, Jane, jaw, jello-book, kiss, kitchen, letter-box, light-shade, love-bite, ma'am, man, mattress, McCoy, mole, nest, Nora, petticoat, piano, place, pocket-book, purse, racket, rib, sack, scraps, seat, ship, shredded-wheat, sir, skin, song-book, splinter, sponge, springs, stockings, stove-pipe, strop, street, stump, sun, Susie, sweater, swing, table-cloth, tablet, temple, thimble, time, tongue, vein, wash-stand, way, wood-box, zwieback.

Verbs—81:—aren't, believe, bless, blue, bounce, brush, burn, call, chew, climb, close, comb, cover, crack, cross, crying, dance, darning, doing, emptied, feed, found, flew, freeze, grunt, had, heard, hid, "holler," hop, hushed, iron, is, keep, kneel, let, lift, like, look, lose, making, mark, meet, paddle, 'phone, pinning, pump, punch, push, put, rest, rub, ruined, see, set, sewing, singing, slide, spark, speak, sprinkle, squeeze, stay, straighten, stretch, swallow, sweeping, thread, throw, tore, torn, touch, treat, turn, unpin, wait, wake, watch, went, whistle, work.

Adjectives—27:—a, afraid, all, another, awake, better, big, brown, busy, careful, close, closer, drunk, front, high, little, loose, much, new, right, some, sore, still, the, three, white, wrong.

Adverbs—10:—again, around, awhile, better, directly, inside, once, round, where, yonder.

Pronouns—5:—her, I, them, they, what.

Prepositions—6:—after, by, in, on, to, under.

Conjunctions—1:—and.

Twenty-fourth Month

Nouns—66:—Andrew, aunt, Belle, blubber, breeches, candy, Central, chalk, Connor, cornbread, curler, dolly, Dolph, dose, Easter bonnet, Elbert, everybody, Fanny, Fayetteville, flipper, folk, Gibson, glass-case, hall, Hattie, hog, hold, Jack, jam, Jewell, kitty-cat, Lambert, lid, Lillie, Lois, Mabel, mammy, mantel, Margaret, Mary, Monticello, necktie, number, pig, preserves, rattle-box, ribbon, Robert, rocking-bed, rooster, rope, scar, Scott, shell, slipper, speck, stool, strap, suit-case, tears, thunder, tobacco, uncle, Wallace, Wella, wheel.

Verbs—37:—barking, bring, burned, can't, crook, dress, fixed, gave, give, grinding, has, hunting, killed, laugh, lay, leave, looking, might, needs, part, playing, plow, poke, pour, powder, prop, rake, reading, rinse, save, saw, start, think, told, turning, unfasten, winding.

Adjectives—11:—an, barefoot, beautiful "bitty," blue, dark, fresh, meddlesome, middle, sorry, two.

Adverbs—2:—about, nearly.

Pronouns—1:—herself.

Prepositions—4:—at, behind, of, with.

Twenty-fifth Month

Nouns—37:—Alcorn, bananas, beans, bowl, buttonhole, candle, coat-hanger, cold, Emma, end, Evans, fork, grandma, grandpa, greens, ironing-board, John, lace, manicure scissors, marble, meal, meat, night-gown, onions, parasol, pat, rest, safe, sleep, slop-jar, Stella, strawberries, syrup, Thomas, Virginia, whip, worm.

Verbs—42:—be, bother, broken, cackling, came, climbing, could, count, did, didn't, drank, feels, finish, fixing, getting, going, hammering, jumped, knocked, know, lean, moved, must, pecking, picking, pounce, said, says, shaving, shoo, stir, talking, tangled, undo, undoing, unthreaded, was, washing, will, wind, wiping, won't.

Adjectives—18:—bare-footed, both, damp, fine, first, five, four, itchy, lazy, old, own, sick, six, soft, that, tiny, too, worse.

Adverbs—4:—across, just, more, quite.

Pronouns—4:—me, my, that, us.

Prepositions—2:—against, over.

Interjections—2:—bang, whoopee.

Twenty-sixth Month

Nouns—103:—air, afternoon, Austin, back side, bags, band, bicycle, blackberries, blessing, board, bones, bonnet, bottom, bottomside, breast, breeze, bug, cabinet, car, "catty," Cavaness, chicken-broth, Collins, color, commode, core, corset, couch, course, crack, crust, cuff-button, curtain, curtain-rod, day-light, dent, dime, door-knob, doughnut, dust-pan, envelopes, fireless cooker, flapper, flour, grass, hulls, ice, kind, knee-cap, lavatory, lemonade, lettuce, Loraine, love-pat, mail, meat-saw, mint, morning, mosquito, mud, mumps, nail-brush, news, nothing, oats, paddle, part, pattern, peas, petals, pie, plug, pretty, quarter, rake, register, roses, rubber-hose, scratch, shade, shave, shuttle, sink, skirt-box, spout, step, "suit-bag," swatter, switches, tack, things, throat, ticket, tick tock, tie-holder, tinfoil, tooth-paste, top, trimming, weeds, Wilson, woman, yard.

Verbs—97:—act, acted, am, being, belong, bend, bent, bit, bleed, brought, can, combed, cool, couldn't, crowing, dig, does, dressed, dropped, dry, eating, excuse, falling, fan, fastened, follow, guess, hasn't, hiding, holding, hopping, hurry, intend, isn't, kissed, knocking, knot, laughing, left, letting, listen, made, mashing, mean, measure, mind, ought, passed, patting, peel, peeped, plant, popped, pulled, quit, rang, reckon, ringing, scare, scared, seems, sent, show, slam, slammed, sleep, snoring, spilled, splash, spoil, standing, step, sticking, studying, stump, stumped, swat, taking, tangle, throwing, ticking, tickling, use, visiting, waiting, waking, warming, washed, wasn't, waste, watching, wet, wiped, whip, would, wouldn't, yawn.

Adjectives—34:—alone, any, asleep, baked, "barefooted," bareheaded, bucking, crusty, darling, dead, dry, easy, fat, fatty, glad, great, green, late, long, muddy, next, none, open, pink, precious, quick, sharp, short, straight, such, sunny, thirsty, this, ugly.

Adverbs—10:—downstairs, far, maybe, never, not, overboard, pretty, rather, then, upstairs.

Pronouns—12:—he, hers, him, mine, she, themselves, this, who, whose, your, yours, yourself.

Prepositions—5:—around, between, for, like, till.

Conjunctions—3:—as, but, when.

GROWTH

Stages of Growth

(a) It is difficult to divide the acquiring of a vocabulary into different stages of growth. At best we can only name the stages according to the dominant characteristic of each. During the first few months E had plenty of voice, but no vocabulary. She had many impressions, and each impression was followed by an expression, mostly reflex. A pain often caused her to cry out. The cries of a child are prerequisite to speech, but there is a general agreement that the earliest cries of a child have no language significance. The cause of

these cries is a disputed question. "Preyer, Perez, Moore, Trettien, Sully, and others agree that a child's first cry is one of pain rather than 'of indignation and wrath' (Kant), or it may be 'a lament over the sin and misery of this world.'" But Preyer, Shinn, and Genzmer contend that a newborn child is insensible to external stimuli.

(b) E's cries soon grew to have a meaning to her. In spite of Hume's contention that we don't know the cause for anything, E soon learned that certain cries brought her attention. Her cry for food was different from her cry caused by pain or desire for company.

(c) E began early to show by gesture her likes and dislikes. Motioning for someone to go away, take the food away, etc., appeared before any effort to express herself through words. Gesturing is still important with her.

(d) When E was only six months old she would chatter so much, saying *ma, ma*, and *da, da*, so plainly that her parents did not have to stretch their imaginations or consciences very much to think that she was beginning to talk. But six months and more were yet to pass before these syllables carried any meaning with them.

(e) Imitation will be taken up more in detail under *Method of growth*. This stage, like gesturing, is still prominent.

(f) From the age of twelve months to nineteen months E spoke single words only, with the exception of "thank you," "go on," "come on," "get up," etc., which were as one word to her. At the age of nineteen months she looked at her doll's head and said, "head broke." She had previously said "broke," which meant as much to her as if she had said, "My doll's head is broken." E had learned about 160 "word-sentences" before she began putting them together. Now she seldom expresses herself with one word only.

(g) The I-feeling stage, if a stage at all, came a little late. E was in her twenty-fourth month before she ever used "I" intelligently. When the meaning of the pronoun came to her, she really got pleasure in repeating time and time again, "I eat, baby eat, Elizabeth eat." Ross says in his *Social Psychology*, "Self and Society are twinborn." E probably sees others as *not I*, or *I* as *not-others*, but she has not yet learned to use *we*, though she has used *us* and *our*.

Methods of Growth

(a) Imitation.—Everyone who has written on the growth of language emphasizes the power of imitation. Preyer says: "It is without doubt the first and most important factor in

the learning of language by the individual." "Learning the mother tongue is essentially a kind of imitation."—Sully (49). "The larger part of the process depends on those about him rather than on the child himself."—Wundt (52). It is difficult to say at what age E began to imitate, but not until she had made sounds and movements similar to those imitated. By the time she was fifteen months old she would try to say any short word that her parents said or to make any simple movement that they made. Once after she had tried to say a half dozen simple words as fast as she heard them spoken, the word *Nebuchadnezzar* was spoken. At this E made no visible attempt at imitation, with a possible exception of a slight movement of the lips. This, with other similar experiments, made it clear that E imitated no sounds or movements until she had practiced on them,—this practice, of course, coming through reflex, spontaneous, or emotional movements. This is also shown by the fact that the new words which she uses grow longer and more complex, with but few exceptions, from month to month. Taking the length of nouns only, the average word for the twelfth month contains 3.5 letters; thirteenth month, 4 letters; fourteenth month, 4.25 letters; fifteenth month, 5 letters; sixteenth month, 4.6 letters; seventeenth month, 5.5 letters; eighteenth month, 5.4 letters; nineteenth month, 5.2 letters; twentieth month, 5 letters; twenty-first month, 5.7 letters; twenty-second month, 5.9 letters; twenty-third month, 6.1 letters; twenty-fourth month, 6.1 letters; twenty-fifth month, 6.2 letters; twenty-sixth month, 6.2 letters.

At present E's muscular co-ordinations are such that she tries to imitate almost every word that she hears. She also tries to hold the scissors as her mother holds them, hold a book as her parents do, or imitate any other action in which she may be interested. At the age of twenty-one months she tipped her hat and said "how do you do."

(b) Auto-suggestion.—Besides imitating others, E often makes sounds that she repeats time and time again. This is called by some *auto-suggestion*; by Baldwin, *circular reaction*. The first expressions were usually emotional, spontaneous, or reflex. The pleasure afforded by these new sounds caused them to be repeated for no other purpose apparently except to experience the peculiar sensation again; *e. g.*, a certain note would be struck and continued. She would get her voice keyed high and go over and over certain inexplicable sounds.

(c) Contrast of ideas.—By this is meant placing one idea over against another. As soon as E began to talk in sentences she would say, "Baby has a hand, Mother has a hand."

"Baby walk, Father walk." "Mother sew dress, baby sew scraps." After she learned that her name was Elizabeth Grant she repeated it several times and then looked at her father and said, "Father Grant." This contrasting of ideas seemed to cause E to talk when she would say nothing about one idea alone. No one tried to teach her this mode of comparison. It is a habit that is still with her and probably makes her more observing.

(d) Inflecting words.—Another method that E uses freely is inflecting words of her own accord. After she learned several verb forms ending in *-ing*, she began to inflect others; *e. g.*, *warming*, *running*, *reading*, and others were used by E before, so far as we knew, she had ever heard them. Similarly, she used the past tense of *see*, *go*, and others, as *seed*, *goed*, etc. It may be true that children would use correct language if they always heard it, but there will be a short period in which they use many words incorrectly. E has already passed this period for many of the words. Her parents are careful to repeat the words after her only in the correct form.

Meaning of Words

The meaning of most words in E's vocabulary is continually changing. The world is just as big for one as he can see it. E sees it smaller than her 1,201 words would indicate. Not many of them, if any, have the meaning to her that they have to adults. (a) Meaning independent of picture.—For three months the word *boy* was used by E for any person,—boy, girl, man, or woman,—showing that she could have had no picture in mind. That she had a fair conception of *dog* was not questioned until a few days ago, when she called a goose a *dog*. It is difficult to know what is in her mind when she says, "The dog is barking," but evidently she has no picture of the dog. Many examples equally striking could be given to show that E has no picture corresponding to words that she has used for months. She must have images of many familiar things, but these images did not aid her in getting the meaning. The meaning came before the image. She knows several of the spectral colors when seen together, but she knows very few of them separately. The same is true of coins. In a few cases, after images have been formed they prove to be a great hindrance to a fuller meaning; *e. g.*, E has learned to associate the word *dirty* with most black objects. She now thinks that blackberries are dirty. She said, "No, I want some clean berries." The word *here* for some time meant a certain room; *back side* still means a certain part of the bed.

In general, words mean enough to E so that she gets the thought from a great deal of the "fireside conversation." Her parents, to keep her from understanding, often spell words. This E resents in no uncertain terms. She is fond of simple stories and will sit almost breathless for five minutes or more while one is being told. She will then say, "Tell baby another story." One wonders at what meaning she is getting, but not at whether she is interested. Once after her mother had told her a story E said: "Baby can tell a story. A little girl was passing in the trees. A little boy was passing in the trees. A honk honk came along and ran over the little boy."

(b) Color concept.—E knows red, blue, black, and white, when presented together or separately. She knows pink, brown, and yellow at times, but often gets them mixed, especially when seen alone.

(c) Number concept.—E can count to six, but her number concept is poor. Recently, in counting three or four objects, she counted to six. At present she knows two and probably three. E very often asks, "Where is the other one?" or says, "I have both of them."

(d) Money concept.—E knows many of the coins, especially when a number of pieces are presented at once. She has no idea of their value, however. She enjoys playing with them, but does not know that one buys things with them.

(e) Coined words.—E's experience shows that a child would make its own vocabulary. It is difficult to say just what would be left if imitation of others were taken from her, but she made at least one word to express her own idea. She was thirsty and knew what she needed. She let us know by signs and gestures at first, but this was not sufficient. E began to say "ogy." She had said it many times before we learned that it meant, "Give me a drink of water." Pelsma's child used "I" for water and "uppeday" for up. Mateer (23) tells of a child that "used about thirty, or 3 per cent, coined words."

(f) "Made over" words.—E uses a number of "made over" words and phrases, such as *too bigger*, *too dampy*, *barefeeted*, *too sun*, *salter*, *too much big*, *catty*, etc. After she had learned "lavatory" she called the bath-tub *bathtory*. "Knee-cap" was called *knee-cover*. She often says "Make it bell," meaning "Ring the bell." She learned to kill flies with a fly-swatter. After seeing a little girl hit her ball with a tennis-racket, E wanted to "kill" the ball with the fly-swatter.

Problems Involving Habit

(a) Co-ordinations.—E's earliest sounds and movements had no meaning. The movement with her comes before the meaning; *e. g.*, she learned to say "thank you," "you are welcome," "bye, bye," etc., before she knew the meaning. Though she says these at the proper time, the meaning is still very vague. Important as these co-ordinations are, they must wait and let continued use give them a meaning.

E has a habit of saying, "Let me see it just one time." She has no trouble at all in saying this, yet it has no meaning to her except that it is a more emphatic way of saying, "I want to see that." Some day the true meaning must modify this muscular co-ordination. E learned the words *hide* and *card*, and later when she began to learn *high* and *car* she could not stop with "hi" and "car," but always sounded the *d*. It was with great effort that she got her organs of speech to stop in the middle of an act. After learning the name *Gallaway*, E tried to say *Gelbard*. She would try to say it often, but it would always result in "Gallaway." She knew she had said the wrong thing, but it seemed that the first syllable was a part of a movement that had to be followed by the remainder. She finally succeeded in saying "Gallaway-bard." With some effort she now says either word.

(b) Interchange of words and parts of words.—E often has trouble with such words as *butterfly*, *hand-bag*, etc. She still says "fly-butter" as often as *butterfly*. *Hand-bag* is "suit-bag." At twenty-four months of age she called manicure scissors "toe-nails," because her mother had used these scissors for trimming E's toe-nails. Later she called them "baby-cure" scissors, after having been told the correct name. A few days afterward she was heard to call them "cure a baby" scissors.

(c) The use of *No* and *Yes*.—For some cause E answers intelligently with *no*, but nearly always repeats the question for affirmative answers; *e. g.*, "Do you want some milk?" "I want some milk."

(d) First impression hard to overcome.—E learned a watch-chain with its charm as "chain." Later she was told that a certain part of it was the charm. She could hardly forget the idea that "chain" included the charm. She learned the word *chain* after hearing it spoken twice. She was told what "charm" was at least fifty times during a period of three weeks before she learned it.

CONCLUSION

The study of this vocabulary has been suggestive in many ways. It makes one appreciate more the plane upon which the child lives, the size of its world, and how its world grows. So many little details have suggested themselves that it has been difficult to select the ones most worthy of a place in such an article. It has been the writer's aim to leave out all data that do not help one to see better the child's mental processes.

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ADLER'S THEORY OF *MINDERWERTIGKEIT*

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For applied psychology and education nothing is of greater importance than studies which reveal, even though to small degree, the motivations of conduct, and which thus enable the teacher, employer, parent, or whoever has to deal with the individual in question, to foresee and to guide conduct. Among the investigations in this direction those of Adler, though defective in certain respects, should have a noteworthy place. Adler began as a pupil of Freud, and worked at first with neurotic adults, but has gradually become antagonistic to Freud's own standpoint and has extended his studies, with the aid of his own pupils, to neurotic and normal children. He believes that psychoanalysis can be made of great value in child study because it tries to reach the unity of the psychic life, to work over the psychic content, and reform it when that is needed. All psychoanalysis begins with the belief that the fulfilment of wishes is the dominant thing in psychic life, and that the character and development of these wishes constitute the elements and the growth of personality. Every psychic process receives a new evaluation from this point of view.

One of the first discoveries made by psychoanalysis was that memories which had apparently dropped out of consciousness, exercised a strong affective power below its threshold, and we need not be reminded of the importance which Freud has attached to the proper revival of these in order to free the patient from their power. Here we wish only to emphasize the fact which Adler has emphasized, that what is thus retained is retained because it is desired again; that is, the essence of remembering is wishing, associations are purposive, and no individual lives in his past except as he would fain make it his present and future. This means, however, that the past is not itself the end, but only the means, the material, which the self works over more or less to suit its life-plan.

In speaking thus of memory, wishes and the like, we must keep in mind that no psychoanalyst limits these terms to consciousness. They believe that what is gained by deliberate observation of the self, by voluntary recall, is relatively a superficial part, the part which has never acquired strong

feeling tone, and which has had relatively little significance for the personality. As soon as any mental event is tinged with pleasure or pain, especially pain, mechanisms of transformation or of repression are started which so modify the form and the functioning of the original experience that it becomes unrecognizable in most cases, and most of all to the person most concerned. As far as my knowledge goes, psychoanalysts have not followed out these mechanisms for pleasure-tinged processes to any great extent, but they seem to have proved their case to large degree for the pain-tinged. Now, in the case of the painful psychic process it is a measure of self-protection, sometimes even of preservation of the personality, to turn attention and in the worse cases consciousness itself entirely away from it, and this means that to greater or less degree it descends into the subconscious or the unconscious. These two parts of the personality deal with it in their own way, and allow only those forms of expression which are tolerable to consciousness. Naturally, such expressions are very different in form and apparently in content from the original painful experience, but psychoanalysts believe that there are constant relations between the two, laws of transformation, repression, etc., such that the one who knows these laws can from observing the involuntary manifestations conclude correctly to the original cause.

These repressive tendencies appear most plainly in the person of neurotic disposition, but they are to be found in every one to greater or less degree, as is also the complex.¹ But while the normal person rarely represses pains to such an extent that they fall out of conscious control the neurotic takes to oblivion more easily. Again, even if the normal person does lose voluntary recall of a painful experience, its involuntary manifestations may run their course for a time and gradually disappear without breaking down the health, either physical or psychical, while in the neurotic the repression seems to stimulate growth. That is, if we may speak figuratively, the normal person exposed to pain and sorrow develops psychical anti-toxins which are sufficient in most cases to preserve him from psychical death or permanent lesions; but the neurotic lacks the power to form these anti-toxins, and the invading bacteria attack all parts of his psychic structure and may leave lesions in any part.

But what parts are most likely to be attacked? Naturally, those that are weakest, and here begins Adler's theory. In

¹ The term "complex" is used in general to indicate a strongly affective memory which is usually painful, and with which other ideas may become associated, the whole group of associated ideas and feelings forming a constellation.

his original study in 1907, *Ueber Minderwertigkeit von Organen*, he starts with this very illustration of bacterial disease. The weak spot, the one open to the attacks of disease, is, he believes, usually if not always an inferior organ. Such an inferiority may manifest itself either in the structure or the function of the organ, though usually both are involved. Not infrequently also, the organ can be called weak only in a relative sense, that is, it is so nearly normal that only some unusual strain shows that it yields to disease or fatigue sooner than other organs.

The weakness of an organ may appear either in its structure or its function. In the beginning, the individual of course knows nothing about an inferior structure, unless it is very serious or is in an external organ. In most cases he only knows that it is hard for him to meet the demands of life in this or that respect, but he does not think of seeking the cause for his difficulties in some organ.

Functional inferiority, again, shows in the unsatisfactory amount or quality of the work of an organ in response to the demand upon it. The attempt to make good this imperfect functioning, the compensation for it, may show in a variety of ways. (1) If the organ is one of a pair, its symmetrical organ is altogether likely to take up its work. In some cases the inferior organ then ceases to work and atrophies while its mate hypertrophies, or becomes diseased from overwork. In some cases, however, there is no such compensation.

(2) In other cases again, another organ may take up the work of the defective part. Thus an inferior kidney may be compensated for in the stomach, or in the circulation, all the excretory processes perhaps becoming modified to some degree. Sometimes the organ will belong to the same general system as the inferior one, sometimes not. The brain frequently compensates for a defective functioning. Sometimes the organ which compensates becomes itself diseased, controls all the symptoms of the patient and makes correct diagnosis well-nigh impossible. *E. g.*, there may be consecutive diseases of the heart, skin, eye and digestive tract in attempts to compensate for a weak kidney.

(3) Or again, the organ may work out its own salvation by its own excessive functioning. Which of these courses will be followed depends upon the reserves of power in the different parts of the body, and thus we may get almost any modification of function, secretion, or growth. In general, however, Adler believes that the more nearly normal an organ

is the more it compensates by hyper-function; the weaker it is the more it compensates by hypertrophy.

Inferiority of an organ, whether structural or functional, especially if it is slight, does not mean an early death or even a breakdown. Compensation for slight defects may go on unconsciously and only manifests itself to the psychoanalyst in nervousness. Nevertheless, it is highly important for the happiness and success of the individual to discover such weak spots, and the physician as well as the teacher has indications of great value here. First come indications from heredity. As Adler states it, we all inherit one or many inferior organs, but this defect may appear in different parts of one system so that children and parents may vary greatly in their ability to meet the demands of life. Epilepsy, *e. g.*, indicates that some part of the brain is defective. The various equivalents of the attack are, in his opinion, attempts at compensation, and include such widely different things as the work of epileptic geniuses, criminals and alcoholics. Again, diabetes is not inherited, but an inferior digestive tract is. Probably cancer never develops save in an inferior organ. That is, if there is a known defect in the parents, defect should be sought in the child in the same system of organs or else in some compensation by the central nervous system, which will be considered presently.

Secondly, memory is of great aid in diagnosis. Inferiorities are very likely to be more manifest in childhood than later, and the recall of these either by the patient or by members of his family frequently gives valuable hints for diagnosis. Stuttering, blinking, vomiting, and many other slight defects are all significant, while on the side of compensation, unusual facility in speech, artistic appreciation of form and color, etc., are also.

On the side of structure, the ordinary stigmata are the most obvious indications for the physician. These are due to some defect in the embryonic nourishment of that organ, and may of course be of almost any degree. Thus the stigma, like a misshapen external ear, may be the only part defective; or it may point to a serious defect in the internal ear; or sometimes the internal ear may be defective while the external is perfect. Similarly with the eye, such anomalies as very narrow lids, short and long sight, strabismus, etc., may indicate inferiority in the organ which will predispose to disease. Anomalies of the mouth, teeth, gums and tonsils are closely related to inferiorities of the respiratory tract as well as of the digestive tract. To the careful physician they are sign posts. They point to the parts that should be more carefully examined. In some cases—perhaps one might say in many

cases—the defects are so slight that they seem to involve no bad practical results, but in other cases they may be the direct cause of nervous breakdown and failure in life.

It is rare to find only one inferiority, for even if at first only one organ is inferior, its poor functioning inevitably involves those associated with it, and sooner or later it is sure to involve the reproductive system. Rarely is there any disease, Adler thinks, without some disturbance of the sex functions.

We have to note, finally, that since the inferiority of an organ is embryonic in origin, such organs seem especially to retain certain other qualities of embryonic tissue, viz., great variability, power of growth, and power of compensation. These guarantee adaptability of the organ and form the *organic* basis for the theory of compensation. So far therefore, Adler summarizes his theory in essentially these words: In the struggle for existence the adaptation to altered life conditions is not carried on by the survival of those which are accidentally *stronger*, but by means of the greater variability and tendency to growth of *inferior* organs. This is the kernel of the physiological part of his theory, and if it should prove generally true, it would be a very important modification of the evolutionary theory. It is, I believe, generally admitted to-day that any embryonic tissue which, for one cause or another, survives in the child or adult, does retain the possibility of unusually rapid growth, and if stimulated will grow, as *e. g.*, cancer does. Experimental embryology seems also to have demonstrated that almost any modification of a given organ may be produced if its stimuli (including here its food) are suitably modified. It would be, however, something of a leap from the variability and power of growth of an organ during the embryonic period, to conclude that any organ which has not developed then, will later in childhood follow that curve under the influence of any external stimuli. Adler himself does not, however, bring out this point much. He tells us that if an organ is very inferior it tends to compensate by over-growth, but for the most part he is concerned with those inferiorities in which one organ compensates for another, or in which the organ itself compensates by over-functioning. The last case is the one with which he is concerned as a psycho-pathologist, and which also has the most significance for psychology and education. Let us consider this therefore in more detail.

Suppose we have some organ which is rather weak, say a short-sighted eye. The child adapts with difficulty to any situation demanding clear vision, and in the effort to get clear vision he is likely to use his eyes more, and perhaps use them

even to the point of pain. In the endeavor to see he gets a great deal more feeling, especially of a painful quality, than the child with a normal eye does, and the visual brain centers which are concerned with receiving and associating the visual stimuli, are roused to unusual activity and become more developed. Thus a nervous superstructure is built up in connection with this slightly defective organ by means of which the organ compensates for its own inferiority, and may not only compensate for it but even reach unusual attainment. On the psychical side this greater nervous functioning is accompanied by greater sensitiveness to all visual stimuli, greater attention to them, a better memory for these things attended to, and thus a greater ability to visualize and to develop imagination along visual lines. The sense of inferiority (*Minderwertigkeit*) and inability to meet the demands of life is very painful to the child, and tends to rouse the opposite impulse of aggressiveness, self-assertiveness, or the will to be superior.

To support this general standpoint, Adler brings forward numerous illustrations. He cites one family in which three children suffered from defects of the ear, while the other two showed unusual musical ability. That is, in the two musical children the defects were of such a sort that they could be compensated for in this way. He believes that speakers and singers are likely to have some anomalies of the mouth or nose, and cites Moses and Demosthenes. Beethoven and Clara Schumann are instances of musicians with ear defects. Studies of the students in certain art schools disclosed the fact that 70% had eye anomalies of some kind. And thus he goes so far as to say that defectiveness in an organ opens a sure path to knowledge, understanding and foresight, inasmuch as it makes the individual clearly conscious of the dangers threatening him and sets him to devising the most effective way of overcoming these dangers.

To follow the windings and twistings of the mind in its attempts at compensation is one of the most fascinating studies, though inevitably very incomplete at present. The feeling of inferiority is naturally stronger with children than with adults, because they are small and weak and inexperienced and must compare themselves with father and mother to their own disadvantage. The stronger the feeling, the greater the attempt to compensate as a rule, and to get standards or measures with which to compare oneself. This leads to laying down guiding lines, or setting ideals, or positing ends or purposes which the child believes he can attain. He has a special interest in protecting his weak organ, and covering up its defects from others, or in strengthening it to meet the

demands put upon it. All his powers become tensed; he is more or less anxious, distrustful of self and suspicious of others. He is usually jealous, and may become cruel. He is likely to become disobedient and defiant, unless his sense of inferiority is so great that he seeks satisfaction in external submission with greatly heightened inner tension and rebellion. All this appears to some degree with the normal child who is made to feel inferior, but with the neurotic child it is greatly exaggerated. In him the inner need of respect, assurance, and so on, is transformed into an ideal of self whose realization he demands but can not attain, and yet can not determine to give up. Hence follows a long train of anxieties, humiliations, disillusionments, etc., ending usually in complete nervous breakdown and often in failure in all the life plans. The normal person, however, adapts and makes over his ideal, and changes his guiding lines according to conditions. Assuming that an impulse is a summation of the activity of a given organ with its nervous superstructure, it is evident that its development through life depends on the one side upon the demands of the external world, and, on the other, upon the satisfaction of the needs of the organ. This gives the problem of the adjustment of inner and outer demands. Whatever reaches consciousness from these impulses as well as what is evident to others merely from involuntary betrayals (*Misverstehen*,—*sprechen*,—*handeln*, etc.), may be derived from one impulse or from a combination of many; may have gone through cultural refinements, transformations, etc., and broadened out in numerous directions; or may have been checked in range, or entirely inhibited. In the case of inhibition or repression into the subconscious, the corresponding conscious phenomena are very characteristic:

1. The impulse may pass over into its opposite. Thus a person with miserly tendencies which have become intolerable to him through their painful results, represses this tendency severely and allows himself to be conscious only of his generosity.

2. The impulse may take another end or goal or object. A forbidden love, *e. g.*, still persistent in the subconscious may appear in the conscious as love of religion or a cause or principle or art.

3. The impulse may be turned upon the self. This seems to be the road to illusions, hallucinations and insanity, as well as to other morbidities. The aggressive impulse repressed may become a delusion of greatness or of persecution; a strong wish or desire may become a presentiment or hallucination, etc.

4. The energy of the impulse may be transferred to another strong impulse. It is difficult to see why this is not covered by 1. and 2. though Adler makes it a separate head. The illustration he uses is that repression of the sex impulse may so heighten the impulse to look that sex symbolism is seen in every object; or at the opposite extreme, all sight is obscured and mental blindness results.

The strength of the impulses seeking satisfaction as opposed to the repressions brought to bear by society, culture and the environment in general, gives us therefore a highly complex resultant which we can hardly expect to outline in more than the roughest way.

Even on the first day, in the first cry, Adler believes that the child's attitude is properly described as hostile, and this hostility rises from the difficulty his organism has in getting pleasure. As soon and as long as any organ fails of satisfaction, an excitation or stimulation streams into the nervous superstructure and the impulse becomes greater and more conscious. An inferior organ, therefore, which is never well adjusted to external demands and rarely reaches satisfaction, will have a stronger impulse than a normal, and aggressive tendencies are more likely to be related to it than to other organs.

Adler seems to consider the voluntary muscular system the especial organ of the aggressive impulse, which is subject to the same kinds of repression and transformation as the others. In its uninhibited form it is striking, biting, cruelty, etc. In more limited phases, it is sports, duels, war, and religious, social and racial struggles in all forms. Turned upon self it becomes humility, flagellantism, masochism, etc., with its extreme in suicide. With its object changed and approved by society, it follows such professions as judge, teacher, preacher, surgeon, butcher, and so on. The fearful and awful creations of art and literature are its children. When, finally, the repressed aggression turns to the opposite in consciousness, we get pity, tenderness and altruism.

Here we must note that the defects with which Adler is especially concerned are slight. If they are serious enough so that they are evident to those in charge of the child, he is put under the physician's care, or if though serious they are obscure, he is not able to adapt at all and breaks down completely. When they are slight enough to cause tension but not to prevent compensation, then we get the cases in hand. On the side of feeling, there is a sense of uncertainty, a lack of self-assurance, which leads to vivid imagining of what is desired as well as of the chance of failure; a constant comparison of self with others, and thus jealousy, deprecia-

tion of others and egotism and conceit. The child wishes to be first, but fears the judgment of others and is glad to postpone decisions. In the moral realm, he may be over-scrupulous, painfully truthful, modest to prudishness, and so on, both in order to feel his own superiority and to be able to criticize others. If he sees failure ahead, he is likely to increase in aggressiveness. He does not admit defect in himself but attributes his failure to the illwill of others, to sickness or misfortune not under his own control, to bad inheritance, and so on. Even the admission of defeat is hard and yet he betrays his sense of defeat in many involuntary ways. Often an attack of sickness is the completest confession, as well as a method of getting the attention so necessary to his mental peace. Thus a certain type of neurotic man and woman control through their weakness when they find it impossible to conquer through their strength.

All this is most suggestive and tends to make one believe in the general theory of compensation for the sense of inferiority. It helps one not at all however in tracing the guiding lines, for the characteristic attempts just described may rise as the result of feeling inferior, whatever the cause of this feeling, whether organic or social, justified or not. Here, indeed, in trying to work out the chief guiding lines, one finds what seems to me the chief weakness of the theory in its present form. We have already noted that Adler tells us that the particular form which the compensation takes depends upon the reserve powers of the individual. It may come through a symmetrical organ, or any other organ, or through building up the nervous superstructure of the organ itself. But if we take the case where the nervous superstructure is built up, we enter at once into a field where two large classes of complications occur, viz., the psychical and the social or cultural. It is not sufficient to say that the child with a weak eye will cultivate the visual part of his brain and his psyche. He may or he may not. That seems to depend largely upon the social and especially the family environment. Granted that the little child has a feeling of insecurity originating in some inferior organ, and that he has an aggressive impulse to overcome, to rid himself of this unpleasant feeling, the particular line or direction which he will follow in order to attain this end may vary as infinitely as do personalities themselves and their relations to their social environment.

In the ordinary family life the father occupies the position of greatest power and satisfaction. He is therefore the one envied by the child, and is altogether likely to become the child's first goal. The child very early expresses this in

the wish, "I want to be a man," which, says Adler, means only, "I want to be superior, in authority, as papa is at home." So general is this condition that from infancy itself in the child's mind superiority, power, and the masculine sex are bound together, while inferiority, weakness and the feminine sex are combined on the other side. The child's ideal therefore expresses itself in the sex form, "I want to be a man," whether the child is a girl or a boy, but this does not indicate, Adler believes, that there is any sex meaning in the child's wish, either conscious or unconscious, as Freud asserts. On the contrary, it means only that in seeking a form of expression for his aggressive impulse the child naturally chooses the person in his experience who gets the greatest satisfaction, that is, his father.

This triple combination, however, of qualities which do not inherently or necessarily belong together, viz., superiority, authority or power and masculinity, has unfortunate social consequences in various directions, Adler points out. The child, with his sense of inferiority, desires the feeling of self-assurance, power, satisfaction, and forms the ideal of being like his father. But he is not his father; he is little and weak, subject to punishment, forced to obey, and so he is under more or less psychical tension all the time. Whether he relieves this tension by obedience or defiance depends on the child and the conditions. Both secure for him the attention of those about him and in so far both give him the sense of power. But sometimes defiance, even though punishment follows, may so heighten self-feeling that the child prefers it to obedience and lukewarm approval. Adler believes that all the virtues and faults of the normal boy may be resolved in the end into the subconscious wish to be a man, to be superior and powerful.

But what is true of the normal boy is also true of the normal girl, though with greater emphasis. She too wishes to be superior and powerful, and since these qualities are most in evidence in the father her ideal is likely to be the same as the boy's. But in her case the distinctions made against women and girls both in the family and in society greatly heighten her sense of inferiority. As a rule the mother is subordinated to the father in numberless ways, both large and small, while the subordinate position given to women in society need not be more than referred to. When therefore she chooses the masculine ideal, desires the same satisfactions as her father, makes the manly protest, as Adler calls it, the greater distance between the ideal and the actual makes the psychical tension considerably greater in her case than in her brother's and this, says Adler, is the reason why

there is so much more nervousness among women than among men. Consciously or subconsciously the most normal woman is under greater tension than a normal man, and will be until there is a condition of full equality both in society and the home, a complete recognition that the value of the services rendered by women is equal to that rendered by men. As long as there is this greater tension, however, resulting from the social judgment of inferiority, it is inevitable that women of strong character shall in certain respects adopt and endeavor to follow masculine ideals.

This process goes on for the most part below the child's own consciousness, and the reader of Adler is almost tempted to put it into terms of purely reflex reactions to painful and pleasurable stimuli. But to the observer the child acts as if he had reflected on the means to reach his end and did what he did deliberately and voluntarily. Even in early childhood, when the child takes a place in the family, he shows certain skills, aptitudes, and adaptations which must be referred to this constant will to power. In the neurotic child these are especially evident, so that all the child's bodily attitudes are in truth a pantomimic representation of his character. Every blush and glance, his walk and gestures, his food and other likes and dislikes, to say nothing of defects like stuttering, go back to a sense of inferiority on one side and an aggressive impulse at compensation on the other. On the more purely psychical side, the development of memory depends upon the child's striving against the dominance of present impressions. Memory throws a bridge over to the future of satisfactions, and is in its significance future, not past, for we remember what we wish to have repeated. It is interesting to note here that Stern tells us also that imagination develops earlier than *voluntary* recall, and that the first time-words refer to the future and not to the past. Imagination is but a step farther in the same direction, and thus the guiding fiction, end or ideal, takes the form of the father (or in exceptional cases the most authoritative person in the child's environment), this in turn being only a modified memory of the child's experiences with this person. So children sometimes take the mother for the ideal, or when they are somewhat farther removed from home influences, the teacher, coachman, etc., or perhaps the hero of a story. In all life, says Adler, nothing works so secretly as the establishing of this ideal of personality, and naturally, for its motivation is to limit the superiority of others by depreciating or injuring them in comparison with self and this, on account of the child's weakness, cannot be done if the outer relation seems to be disturbed. The child indulges his fiction of

superiority secretly and outwardly learns to adjust it to external demands so that if he is normal, the fiction and the environment become so adapted that his attitude is a reasonable and moral one. In this process of adjustment the atmosphere of the home is the most important factor, especially as to whether it satisfies the child's need of tenderness and love. Nothing but love, which satisfies the child's desire for self-assurance, and which starts up all his psychical apparatus and keeps him happy, can relieve the tension between the weak child and the strong parent. If it is lacking the child almost invariably focuses on himself, and becomes highly sensitive and aggressive, if not actually neurotic. And so we might consider various typical family situations which injure the child, such as excessive authority by parents who have themselves failed of power and satisfaction in their dealings with the outside world; an undesired child, who is either ignored and neglected or else, through the prick of conscience, is over-cared for without being loved; favoritism by parents toward children. Thus arise estrangement, distrust and hatefulness with the inevitable accompaniment of secrecy and silence in the presence of others, and a highly developed fancy. The child's feeling that he is bad, clumsy or stupid and will be laughed at or punished, is compensated in both his waking and sleeping dreams by an emphasis on the opposite traits.

The development of the neurotic child and person are followed out in rich detail by Adler, since they are the outcome, as a rule, of these slight organic inferiorities with the accompanying sense of insecurity. He gives numerous individual cases showing how the combination of the sense of inferiority with the aggressive impulse and desire to be above leads to all the characteristics of the "nervous" person—fanaticism for truth; excessive humility, modesty, or virtue in any form; unrealizable ambition; envy and jealousy of others, with the various forms of depreciation of them; ambition in science, art, or what not, as forms of power; undue craving for love and affection from others and excessive demands from those who love him, etc. These are the more direct ways in which the individual compensates and secures the feeling of assurance so necessary to his happiness.

But again, when the neurotic is unable to attain his end in these ways, his path becomes more devious. He may make a cult of his weakness, exaggerate his helplessness, and develop childish or invalid traits, in order to be the focus of attention and care. Or again, he may take the most directly aggressive line of all and become frankly selfish, cruel, or criminal. Which of the many lines he does actually follow

is the resultant of many factors, but probably Adler would be willing to make the general statement that the impulsion always comes from the feeling of inferiority plus the will to power, while the form of the ideal or end depends upon the conditions under which the child lives.

All this is very suggestive to the parent, teacher, and social reformer as well as to the psycho-pathologist, but to the layman it seems as if the emphasis upon organic weakness was over-great. Adler himself indicates that if the child's position in the family is such that his weakness is *not* a cause of pain or ridicule, there will be no attempt at compensation. That seems to show that the weak organ does not give rise in itself to the sense of inferiority, but that the demands made upon the child for adaptations of one kind or another do. Many a dyspeptic never attains to wealth or to scientific eminence; many a one with defective eyes or ears fails to become skilled along artistic or musical lines, as Adler himself remarks in an aside. On the other hand, there are plenty of persons who have no organ that could properly be called defective, either in structure or function, who do nevertheless feel inferiority, and compensate by attaining eminence along the line of the strongest organ, instead of the weakest. They have been put into a social environment which depreciates them, as they feel unjustly, and this rouses the aggressive impulse as a mere inferior organ never can.

That is, the question may fairly be raised by the psychologist whether it would not make Adler's theory of *Minderwertigkeit* more complete and valid if organic weakness were put as merely one of the causes which favor the sense of inferiority instead of being an invariable cause. Adler himself is unable to trace any constant relation between a given weak organ and the compensations for it, the compensation sometimes being hypertrophy of the organ, sometimes functioning of another organ, sometimes development of neuroses or psychoses, and sometimes development of talent or genius. Such a variety of possible outcomes surely argues that the organ is not the determining cause, but that the social factors are. The social reaction on the individual is the spur to better adaptation, and the guiding lines, or fictions, or ideals are shaped by this reaction. The great majority of children get enough love and consideration at home and in school so that they do not strive to escape, and they grow up quite content to be ordinary citizens as their parents were before them. There is every probability that many of them have enough mental ability to raise them to a better social and financial status if they cared enough for the progress to work harder, or if they suffered from the sting of being held in an

inferior estimate by their associates, or were put under conditions where the external pressure to do better work were great enough. Men develop greatness in response to the demands made upon them. If, therefore, the child is protected from the need of social adaptation, or if the demands are so excessive that he feels hopeless of satisfying them, he is not likely to attain eminence even if he has innate ability. Society's greatest task is to learn how to apply the right amount of social stimulation, the right proportions of praise and blame, criticism and love to keep the individual self-respectful but not conceited, happy but not lazily contented, attentive and energetic but not a sufferer from *Angst*. The great task of pedagogy is to transfer the feeling of inferiority and the aggressive impulse to ever higher intellectual and moral planes. This means to apply social stimuli on the one side and to supply the best ideals on the other, and then the mechanism of compensation so well described by Adler will have free play.

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ETIOLOGY OF SCOLIOSIS¹

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Descriptions and Signs of Scoliosis.—The term Scoliosis is a Greek word, says Lovett (73), dating from the time of Hippocrates, meaning a bending, twisting or curving, and is used as synonymous with lateral curvature of the spine or its equivalent in other languages. In German it is termed *Skoliose* or *seitliche Rückgratsverkrümmung*, and in French is known as *Scoliose* or *déviation latérale de la taille*.

Lovett (70, p. 40) defines scoliosis as "a condition in which any series of vertebral spinous processes may show a constant deviation from the median line of the body, a deviation always accompanied by an element of twisting." Whitman (120a, p. 149) describes lateral curvature of the spine as an habitual or fixed deformity in which the spine is deviated in whole or part to one or the other side of the median line."

Again, to quote from Lovett (70, p. 44), "although scoliosis is generally studied and classified as a deformity of the spine, the laws of equilibrium of the body are such that any deviation of the vertebral column must disturb the whole balance of the body, and scoliosis is therefore accompanied by compensating lateral displacement of the pelvis and legs. In this wider sense scoliosis is to be regarded as a deformity of the whole body, especially manifested in the spine."

The characteristic sign of scoliosis is a distortion of the symmetry of the body. This may be accompanied by "a high shoulder" or "a prominent hip," etc. The condition

¹ I wish to express my sincere thanks to Dr. William H. Burnham, under whose supervision this thesis has been prepared, for suggesting the field of investigation and for his personal interest in its development; to Dr. E. G. Brackett, of Boston, and Dr. K. Emerson, of Worcester, for the loan of private materials; to many members of the medical profession, both here and abroad, for valuable books and reprints of their publications.

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is essentially a distortion, and other signs than the deformity are rather unusual in average cases.

Classification.—According to Lovett (70, 73) and Tubby (119, p. 406) there are two types: First—Functional, also spoken of as postural or total scoliosis, faulty attitude, or “false” scoliosis, a term used by some of the more recent German writers. Second—Structural, organic or true scoliosis. There is an intermediate or transitory type, through which a curve passes in the development from functional to structural types. I. The term “total scoliosis,” Lovett (70, p. 46) states, is applied to cases where the spine forms a gradual curve to one side without marked rotation or compensatory curves. The typical characteristics of a left total curve Lovett (73) finds are as follows: (1) The spine forms a single lateral curve, in 90 per cent of the cases convex to the left; (2) the left shoulder is elevated; (3) the right side of the shoulder-girdle is carried back and the left side forward; (4) when the patient bends forward the right side of the back may be slightly higher than the left. Transitional curves: In many cases which on first inspection appear to be postural, a more careful examination will show that the curve is obviously changing from a functional to the structural type, *i. e.*, beginning to show changes of structure. In these cases some of the characteristic signs are absent. For instance, the upper part of the spine is less curved than the lower, or, the right shoulder may be elevated in a left curve. To quote from Lovett (70, p. 51), “it is not exceptional to notice in a curve that has been clearly a typical left postural one, a few months later the dorsal spine is straightened and even becoming slightly curved to the right.”

II. The term structural scoliosis is applied to those cases in which there is reason to believe that a structural change has occurred in the vertebrae. The characteristic feature of structural scoliosis is the presence of a backward prominence of the chest or loin on the convex side of the lateral curve, that is, the side toward which the spine yields. Kirsch (62) states, “a sign which is fairly sure to be present in all scoliotics is the torsion of the abdomen.” This he found present in all but five per cent of 1015 cases examined. Structural curves are simple and compound—simple when the deviation is accompanied by no compensating curve, compound when more than one curve is present. The simple curves are often spoken of as C curves and the double as S curves. Triple curves may exist.

All classifications to-day are based upon symptomology and are merely tentative. It is very desirable to have a classification according to the etiology. No doubt this will come and, as Schanz (96a.) says, the next great step in scoliosis is from the point of view of pathology.

Scoliosis and School Life: This subject was formerly discussed only by physicians, but to-day it is given due consideration by physicians, teachers, and the laity. It concerns the welfare of all families having children.

When we realize, says Sever (108), that at present about twenty per cent of the total population of the United States spends from three to five hours a day in school, and that this percentage is likely to be higher than lower with the increase in the extensions of the public school system, the responsibility of the proper care and supervision of this enormous number of children is great.

The United States census of 1910, shows the total number of persons of school age,—that is from six to twenty years inclusive,—was 27,750,599, of whom 17,300,202, or 62.3 per cent attended school. The period of maximum school attendance is from ten to fourteen years of age. For these years a comparison may be made with the census of 1900. In 1900, 79.8 per cent of the children attended school compared with 88.2 in 1910, showing an increase of almost ten per cent. In the group of six to fourteen years inclusive,—the most common years of school attendance,—there was a total of 16,832,374 persons reported in 1910, and of this number, 13,706,980, or 81.4 per cent, attended school.

The relation that school conditions bear to scoliosis, writes Lovett (70, p. 111), is one of the most important questions in formulating the cause of scoliosis. There has been in the past a general tendency to regard scoliosis as a deformity largely associated with school life, and a disposition to consider unhygienic school conditions as the cause of scoliosis among school children.

Sever (108) writes: "School life is to a certain extent an artificial one for the growing child, whose normal growth depends considerably on its muscular activity. The child entering in ordinary schools undergoes a physical as well as a psychical depression. Schoolroom discipline naturally tends to check this muscular activity, resulting in, or causing bad postures, nervous tension, strain and exhaustion."

One writer (113), in 1908, after citing statistics of scoliosis among school children, says: "So far we have proved that scoliosis is a disease which is caused by faulty position and occurs during school age. Can we find in school life anything which will habitually cause this faulty position in so great

a proportion that we can safely ascribe to it the formation of this great number of cases? The most cursory survey of the position of the majority of school children, is convincing, that the habitual position forced upon the pupils in our schools by faulty seats and by slant writing is the great cause of scoliosis."

Another author (32), in 1905, concluded that "there is such a thing as a school lateral curvature. Whether it is a left lateral curve or a curve of another variety is of relatively little importance, the point being that the school is a predisposing cause to deformity."

Schulthess (101) says: When we refer to a school scoliosis we mean a left convex total scoliosis of boys and lumbar scoliosis of girls. In the other forms of scoliosis the school is not to be recognized as the chief cause. His theory is, that the spine of the child which is naturally prone to bend to the left, is given an opportunity to assume the attitude and to maintain it for some time on account of writing. He thinks it is the prolonged sitting position which does the harm in children prone to the other types of curves.

Other recent observers, Kirsch (63), Schanz (97) and Chlumsky (26) have proved to the contrary that the school is not so much to blame for scoliosis as is ordinarily believed.

Chlumsky (25) examined 500 children, the majority of which did not attend school, or were not of the school age, and among them many had scoliosis. He is of the opinion that neither the school nor the bad posture in writing was the cause of curvature.

Dr. Burnham (20b) states the argument is usually somewhat as follows: "There are a relatively small number of cases of scoliosis. The number of cases increases greatly from the lower to the higher grades. The most common form of lateral curvature corresponds exactly to the temporary malpositions most frequently found among school children in their work in reading and writing at the school desk, hence the disorder is distinctly and directly caused by conditions of school life. Plausible and impressive as this argument is likely to be when supported by the old statistics of Eulenburg, Meyer, Krug, and others, yet recent investigations show it is seriously fallacious."

"School" lateral curvature, a condition caused by the school, was a frequent expression, and this general point of view was on the whole unchallenged until 1910, when the German Orthopedic Association (71) held a symposium on the question of the relation of scoliosis to school life, which led to the expression of some very radical views on the subject, and, curiously enough, these views on the whole agreed

with each other, in expressing the opinion that school life had received too much blame in the matter and that scoliosis of any more than a very mild degree was not likely to be caused by school conditions. As the men taking part in this discussion were the leading authorities of Europe, this consensus of opinion becomes important, and it seems worth while to try to find out from the data at our command, as nearly as may be, what place we should assign to school life as a cause of scoliosis.

While the school may not be directly responsible for the development of scoliosis, there is no doubt that the school, or rather certain conditions concerned in the routine of school life, bear an influence upon, or aggravate existing scoliotic conditions.

Citing again from Sever (108): "In fact, the school life of a child has a very real and important influence in direct relation to its physical development. School deformities are usually due to, or if, present, increased by prolonged sitting in faulty positions, combined with too little muscular activity. It is thought, however, by many observers that faulty postures alone are not enough to cause marked structural deformities, but given conditions in the child which imply lack of bone or muscle resistance, the deformity—more or less severe—may develop. Anything which reduces the general vigor and health of the child will consequently decrease its resistance to abnormal and long-continued strain."

It may be reasonable to assume, writes Lovett (71), that: (1) bad air, fatigue and school life under poor general conditions; (2) improper school furniture, and (3) twisted writing positions favor bad attitudes, and that the more constantly they are in operation, the more effective will be their result in producing bad posture. In the same way unfavorable home conditions, such as improper food, overwork and unsanitary surroundings, depreciate muscular strength and favor poor posture. It is also probable (14) that faulty attitudes of standing and sitting outside of school hours may be equally injurious.

In accordance with the opinion of the best modern authorities (70, p. 115; 110, p. 28) it is therefore likely on general principles that unfavorable school conditions are a competent cause of postural or false scoliosis and of slight grades of true scoliosis, but that they are not the cause of moderate or severe scoliosis.

In considering the existing data with regard to the occurrence of scoliosis in school life Lovett (71) says: We find no figures dealing with the question in America and it must be

remembered that data from foreign sources, although applying to our conditions, cannot be unreservedly accepted. There may be a great variation in the percentage of scoliosis in school children of two neighboring cities and between children of different schools in the same city.

In reference to the frequency of the occurrence of scoliosis, Sever (108) writes: "The frequency of scoliosis in school children increases with the age of the child and the class, but that constancy is not always found; and their susceptibility to compound or structural curves increases also with their age. There is a rapid increase between the ages of eight and thirteen years, especially between the ages of eight and eleven,—a period usually of rapid growth; which period also corresponds to the highest percentage of school attendance for persons of school age."

Kirsch (63) of Magdeburg, examined 1015 school children, of which 518 were boys and 497 were girls. There were 493 of them in the lower classes and 522 in the upper classes. He found 21.8 per cent of the girls in the lower classes and 41.1 per cent of the girls in the upper classes had scoliosis; also that 19 per cent of the boys in the lower classes and 24.4 per cent of the upper classes showed evidences of scoliosis. Seven and four-tenths per cent of the girls had fixed or structural scoliosis; and 7.2 per cent of the boys showed a similar condition.

The inference was that the influence of school life raises the proportion of scoliosis from twenty to thirty per cent; whereas, in the girls, the proportion of rise in the cases of fixed or structural scoliosis was 5.5 per cent; there was no increase in the boys.

Gronberg (70, p. 115), reported his observations on 8,350 school children in Finland, stating that 48.1 per cent showed evidences of bad attitudes and deformities.

Dukes (108) reports 445 cases of lateral curvature out of 1000 boys examined, giving a percentage of 44.5, with 126 cases of acquired pigeon breast.

Scholder (100, 108) examined 2314 school children at Lausanne, and found 571, or 24.67 per cent scoliotic; frequency equally divided between the two sexes. The majority of these 571 cases had a left curve. He believes this tendency to a left-sided lateral curvature is alone a sufficient argument that school is a determining factor in the causation of scoliosis; for the curve corresponds to the faulty attitude taken by the child when writing. His statistics show that the children who have been the longest in school have the greatest

percentage of postural deformity, and compares his figures with those of other observers in other places as follows:

	School Children		Scolioses	Percentage
Guillaunne, Neuchatal.....	731	(boys and girls)	218	29
Krug, Dresden.....	1418	(boys and girls)	357	25
Hagman, Moscow.....	1664	(girls)		29
Hallbach, St. Petersburg..	2333	(girls)		26
Scholder, Lausanne.....	2314	(boys and girls)	571	24.67
Average, about 27 per cent.				

The investigation of Scholder, says Dr. Burnham (20b), shows that by studying the different kinds of scoliosis separately, we find that apparently only two forms of spinal curvature, namely, the total functional and lumbar scoliosis, increase from the lower to the higher grades; and these, if any, are the only forms that can be attributed directly to the evil influences of bad posture in the school.

Silfverskiöld (109) of Stockholm examined 3234 girls in Gothenburg schools, and found scoliosis present in 416, or 12.8 per cent. He states that the largest proportion of cases occurred in apparently robust girls of fifteen years of age and that many showed asymmetry of growth.

Haglund (108) examined 1599 cases, of which 283 were scoliotic and showing an increase with the school age.

The average of all observers shows that scoliosis is present in about twenty-seven per cent of the school children, with the greatest frequency between the ages of seven and fourteen years. From an analysis of 9485 school children examined by different and competent observers in various parts of Europe, there were twenty-five to thirty per cent affected with lateral curvature.

There is no reason to suppose that American children are any less affected than the children in Germany, Russia and Switzerland. We may note from this review of some of the statistics, that scoliosis is a real problem to be met with in the school child.

During my experience as a Physical Director in College work I found scoliosis quite prevalent among the entering classes. Let me quote from the Cornell statistics on scoliosis for the years from 1909 to 1912. In 1909—85.30%; 1910—78%; 1911—88%; 1912—87%. The reason for the falling off in 1910, could not be accounted for, excepting to say that it was probably due to the fact that the Medical Director did not make all the examinations himself. These cases are for the most part functional, yet all showed some degree of scoliosis.

Is there a school scoliosis? Schulthess (102) says: If it

were so, we would meet with a particular form. The most prevalent form found in school is the left convex total curve and in from twenty to sixty per cent of the cases. Statistics show an increase with the advance of classes. Again, he says, this form of scoliosis is found in children before entering school. In different places with varied writing positions, school examinations have given same results. All this, says Schulthess, does not go to prove the presence of a specific school scoliosis. He believes that there are other underlying factors that will be more convincing, to be discussed later.

Is there a school without scoliosis? Herz (52, 97), in New Zealand, examined 500 school children and found scoliosis almost absent, and this although school hygiene conditions are not so good as in Germany. The inference may be that scoliosis is not the result of the school.

The modern scientific methods, writes Dr. Burnham (20b), with more extensive and thorough investigations by the use of the X-ray and the broader study of infancy, have radically changed the views regarding the relation of scoliosis to school life.

The recent studies of Kirsch (62), Muskat (78), Schanz (97), Schulthess (102), Böhm (12), and others, have shown that we cannot understand the cause of scoliosis without a more careful examination and study of the conditions and diseases of infancy. Many cases begin, they say, before the children come to school, dating probably from the first years of childhood, when rachitis attacks the bony framework, and cause does not lie in the crooked posture of the school. Those whose scoliosis begins in school, do not reach the grade that those beginning before school and this form has little or no harm on general health.

Kirsch (63), after a most interesting study, states: (1) During school life of the child wrong postures develop in great numbers, but only a few become fixed scoliosis. (2) Seven times as many cases of fixed scoliosis are present on entering school, as arise during the school years. (3) Fixed cases are, in so far as they are not congenital, of rachitic origin. (4) Bad posture of school-child, in which no symptom of fixed scoliosis may be found, does not lead to severe forms of scoliosis. But, after long continuance may show some fixation.

The best European and some American authorities agree that (1) rachitis is the chief cause of scoliosis and is responsible for more than 50 per cent of the cases; (2) Innate abnormalities play an important rôle in the etiology and may account for from 15 to 20 per cent, leaving about 30 per cent for other causes.

Are the children harmed by the form of scoliosis that may be developed in the school? It seems to me, any abnormal condition, whether functional or organic, will in some degree decrease the efficiency of the human organism. A slight curve, brought about by improper posture, may be rapidly increased, depending somewhat upon the general health and muscular development of the child.

Lovett (71) concludes, from his study of the relation between scoliosis and school life, to which I agree, that children of school age are the class most likely to be permanently affected by unfavorable environment, such as bad air, overwork and persistent assumption of bad attitudes. These unfavorable conditions are more likely to produce scoliosis than kyphosis. Also such conditions, as is the opinion of most modern authors, are an important factor in causing postural or false scoliosis and possibly some cases of mild structural type. But the more severe cases must be accounted for by congenital anomalies, rickets, and diminished resistance of the bones.

What can the school do to prevent scoliosis? In accordance with Schulthess (106) I should recommend: (1) The examination of all children on entering school, if scoliosis is present, a note made of the kind, location, direction and degree of severity of the curve and possibility of correction of the deformity. That subsequent examinations follow as it seems advisable according to the needs of the individual case. (2) A careful study into the conditions to which the scoliosis may be secondary. (3) Turning over cases of slight degree to the school polyclinic, and the severe cases sent to an orthopedic institute. (4) Creating special classes in open-air or forest schools for weakly and scoliotic children. (5) To provide every hygienic precaution in the school to prevent injurious influences to the growth and development of the child.

Etiological Factors: Dr. Chlumsky (26) in 1910 gave a full résumé of the results of his investigations on the etiology of scoliosis down to the date of publication. I shall then refer only to the more recent investigations.

There has been a tendency in the last few years toward the recognition of the congenital type of scoliosis. Formerly practically all cases were regarded as acquired, while congenital forms were considered a rarity. The study of the actual anatomic conditions of the human spine has been made possible by the development of the X-Ray. Most modern authorities give due consideration to this subject in the etiology of scoliosis.

In formulating an etiological classification, I have taken that of Schulthess (102) under which general heads, all necessary sub-divisions can be made. It is as follows:

- I. Innate abnormalities.
- II. Rickets and other diseases.
- III. Through forcible changes of the mechanical functions of the spine, whether due to disease of the other organic system, or, to external force.

I. Innate abnormalities:

The conditions (7, 10, 57, 59, 70, 81, 119) which cause congenital scoliosis are various:

(1) Malformation of the vertebra, the bone itself or its articulation.

a. Deformity of vertebra. A wedge-shaped, incomplete or split vertebra, which lies between two normal vertebrae. The fusion of two vertebrae into a single one, or of vertebrae to other structures. Disease of vertebral structure. Dislocation, tuberculosis, arthritis deformans, or tumors.

b. Numerical variation in the spine. Persistence of a greater or smaller number of vertebrae than normal. It is thought there are more often supernumerary than deficient vertebrae. Bardeen (7) believes that about sixteen per cent of all human spines show numerical variation. Keneko (57) found in thirty-seven cases some fault in the vertebra itself. Cases of variation were most frequent; although wedge-shaped and adherent vertebrae were not rare. In several cases he observed a combination of these conditions.

Schulthess (113) refers to the importance of congenital anomalies in the lumbosacral region and describes cases with radiograms and diagrams.

Goldthwait (44) writes of the influence of pelvic joint or sacroiliac lesions. The modern scientific conception is that abnormal conditions in this region are accountable for most cases of sciatica.

Böhm (10, 12) in his extended studies and research at the Massachusetts General Hospital, believes the following statement to be justified: "That developmental error in the human body occurring in embryonic life, which has its morphological expression in the so-called "numerical variation" of the spine, causes, under certain circumstances, those idiopathic lateral deformities of the spine which manifest themselves in the first half of the second decade of life and which hitherto have been considered as affections acquired in post

natal life to pure functional, or functional osteopathic conditions."

c. *Spinabifida*.

(2) Malformation of the scapula. One scapula may be elevated, absent, or malformed.

(3) Malformation of thorax. Irregularities of ribs on one side or both sides, such as bifurcated or deficient.

(4) Malformation of the pelvis, may be congenital or acquired.

(5) Intra-uterine malformation (67), Böhm (9) thinks amnionic pressure in later months of uterine life is cause and Chlumsky (23) endeavors to show that a certain large percentage of scoliotic cases are due to the position maintained by the fetus in utero and that this is often combined with a lack of amnionic fluid.

(6) Congenital rickets, which at present is said to be rather infrequent.

(7) Heredity. The influence of heredity has been given some consideration. Hübscher (54) says: "There are families and entire races whose members are to be recognized by their back." Schulthess (70, p. 96) estimated that from ten to fifteen per cent of scolioses are hereditary. Congenital defects can be inherited, as well as acquired.

Koch (66) claims: "We will only then be able to tell which of the curvatures the spine presents are pathological, after a more thorough and exact study of the phylogeny and ontogeny of the spine, than has hitherto been made. It is almost impossible to define the normal curvatures of the spine on account of normal deviation due to race, relations of the head, extremities, etc. He describes in detail the spines of numerous embryos from Leukart's 2.2 mm size upward, and also discusses the development of the vertebrates from the amphioxus to the mammalia and gives the various congenital racial deviations of the spine from the accepted European normal, among the African and Australian aborigines, etc. Koch believes, "All kyphoses, lordoses, and flattened spines without exception, also every variety of lateral deviation of the spinal column, have a congenital basis for their origin."

Böhm (9) believes the great majority of fixed scoliotic deformities of the chest, not including the symptomatic, those due to difference in length of legs, empyema, anterior-polio-myelitis and tuberculosis, and those not preceded by rachitic bone disease are caused chiefly by congenital anomalies of the trunk skeleton.

II. Rickets and other diseases. (a) Infantile rickets; (b) Adolescent rickets; (c) Osteomalacia; (d) Other bone deficiencies.

(a) Rickets or rachitis (21, 58) is a complex constitutional disease of early childhood, characterized chiefly by defective nutrition of the osseous structures and evidenced by constant lesions in the bones and disturbances of nutrition. I quote from Dr. Burnham's (21) résumé in substance, as follows: "There is a general opinion that the condition is caused by lack of proper food with hereditary tendency. The disease occurs mostly from the sixth to twentieth month of life and affects both sexes equally; it is more frequent and more pronounced in the poor than in the well-to-do, and more often found in the city than in the country. Rachitic cases are maximum toward the end of winter and minimum in autumn and the disease is more frequent in the temperate zone than in the tropical or sub-tropical countries or the extreme north. Rickets is said to occur seldom in white children on normal breast feeding, it is rarely absent in babies fed for a long time exclusively on proprietary foods without fresh milk."

Dr. Burnham said recently, if he were writing of the subject of rickets now he would add, that, if we go still further back for the ultimate or primary cause of rickets, we perhaps should find it in a disorder in functioning or reciprocal relations of the thymus, thyroid, and parathyroid glands.

Rickets (11, 12, 59, 63, 64, 65, 67, 70, 102, 104, 111, 119) has long been recognized as a cause of scoliosis. The trend of recent opinion is toward assigning rickets as a cause of a very much larger number of cases than formerly.

Some authors (12, 65) believe that practically all organic scoliosis, not due to congenital defect or some obvious cause as empyema or paralysis, is due to rickets.

Kirsch (64), who is an advocate of this view, asserts that among the school children of Magdeburg sixty per cent show signs of rickets and ninety per cent of children who come to the polyclinic are rachitic.

Spitzzy (111), in 1905, called attention to the importance of considering rachitis as a cause of early scoliosis. He showed, in what was thought to be a rachitic Kyphosis, there was often found asymmetry in the saggital direction.

Schulthess (104) states: "If in scoliosis we find a right-sided posterior rib convexity and flattening of the skull posteriorly on the left and anteriorly on the right then it may be assumed with certainty that the origin of the scoliosis dates back to the earliest childhood and that the form is rachitic."

Herz (52) found rachitis as well as scoliosis absent in his

examinations of school children in New Zealand. Drs. Böhm and Kirsch of Germany in personal letters have stated that the German Orthopedists are of the universal opinion that rachitis is the chief cause of scoliosis in Germany. Dr. Böhm says: It should be noted that rachitis is more frequent in Germany than in America and yet we shall find it an important etiological factor here.

(b) Adolescent rachitis is most interestingly discussed by Dr. Horwitz (53), of Saint Louis, who concludes that the disease is a recrudescence of a disturbance which existed in childhood; that this recurrence is due to a disturbance in nutrition at the time of great bone activity; that the development of the genitalia is an important factor in the nutritional disturbance at this period.

(c) Osteomalacia (58, 70, p. 99) a condition of bone softening somewhat like rickets, is comparatively rare in infants and may be found in adolescents and adults accompanied by scoliosis.

(d) A softness of bone may exist, write Lovett and Sever (74), not rickets, in which bony deformity is so great it is evident that osseous resistance is below normal. Schulthess (64, p. 96) says, there is a possibility in the beginning of scoliosis being due to defects in the spinal epiphyses.

III. Through forcible changes of the mechanical functions of the spine, whether due to disease of the other organic system or to external parts.

(1) Anatomical, physiological, or other asymmetries elsewhere than in the spine: torticollis, pelvic asymmetry or pelvic obliquity (90) from short leg due to knock knee, bow leg, or flat foot. Unequal vision and eye strain (48, 60, 61, 121) or unequal hearing.

(2) Pathological affections of the bones and joints of the extremities, causing asymmetrical position.

(3) Distorting conditions due to disease of the soft parts, such as: infantile or spastic paralysis; hemiplegia; empyema; organic heart, throat, abdominal and pulmonary diseases; acute or chronic inflammation of the spinal muscles, as lumbago, etc.

Cyriax (30) is of the opinion that diseases of the abdominal organs and heart, especially those of a systolic nature, can bring about spinal curvature in two ways: (1) Through localized contraction of muscles from reflex nerve irritation. (2) Through the assumption of vicious attitudes on the part

of the patient in order to relieve symptoms. These two causes often co-exist.

Jansen (56) ascribes various scoliotic conditions to diaphragmatic influences.

(4) Posture and occupation. Previous to 1900, it is possible, more was written on these two topics as causes of scoliosis, than all other conditions together. In the consideration of posture we may include: lying in bed (38, 110); sitting either at ease, or as in reading and writing; standing, resting on one leg as sometimes in violin playing and the various trades; relaxed positions resulting in weak spinal muscles producing a vicious cycle. Influence of clothing, etc.

Sir Henry Holland says: "Standing has all the disadvantages of posture without any of the benefits of exercise." Sir James Paget said "and for spines it may be said that sitting upright has similar disadvantages without the benefits of rest."

Occupations, especially those of a weight-bearing nature, such as: carrying books, newspapers, packages, groceries, milk, and the like and more often when there is a poor muscular condition, if not primary, are important contributing factors in the development of spinal curvature.

To quote from Dr. Brackett (13a): "Whatever may be the initial point in the etiology of lateral curvature, there is one underlying condition which is an important factor in its increase and growth—that of a gradual structural change which occurs under the maintenance of the distorted position. Not only do the ligaments and the bones yield to the force of unequal pressure, which must necessarily result from the deformity, but the muscles also undergo adaptive changes, and when once the distortion is established, with the unequal distribution of weight and muscular action which is necessary in an equal poise of the body, all factors act in one way to increase the development of this condition."

While some authors doubt that any of these factors just mentioned, under posture and occupation, either alone or combined, can produce scoliosis, yet all agree that they are secondary and contributing, and that by the influence of secondary conditions the scoliosis, which through rachitis or some spinal anomaly was not detectable, became aggravated and increased to such an extent to produce a more noticeable deformity.

Investigations show that many of the factors in the third group are found in a single individual and that further examination revealed a previous condition of rickets, or the presence of a spinal anomaly.

Böhm (11, 12) concludes as a result of his more recent studies that in scoliosis it is not a question of a healthy spine

which through poor posture or weight-bearing influences becomes bent, but a question of abnormal skeleton, caused by two things: (1) Rachitis which has its harmful influences upon the form and growth of the bone. (2) Disturbances of development in embryonic life. He believes rachitis and congenital anomalies are the two primary and essential causal factors which work hand in hand with secondary factors—namely: growth, burdening and the function of the organism.

While this opinion does not settle the problem in a perfect way, says Böhm, it is sufficient explanation for the vast majority of scolioses. A small percentage still remains unexplained. In these cases either the X-ray knowledge is insufficient to determine the anomalies present or the changes are of a congenital nature which we do not sufficiently know. The avenues for investigation are through the X-ray and further anatomical research.

Finally, we may say, the present state of our knowledge of the etiology is unsatisfactory and vague—claiming many causes either primary or contributing. We must look in every direction—investigate and study the conditions of normal growth and the pathology of growth. More especially should we study the innate or congenital abnormalities and the functioning of the glands of internal secretion.

ACCOUNT OF INVESTIGATION

Examination: In connection with the annual anthropometric examinations of the High School students in Worcester, I attempted to make a personal study of the etiology of scoliosis. As my study was concerned with scoliosis, no attempt was made to make a special study of the other anthropometrical data beyond reckoning general averages.

Unfortunately the time allotted for the examination was limited and the facilities inadequate; the results, therefore, are far from being satisfactory, but under the existing conditions it was difficult to do anything more, at this time, than to make a rough classification of scolioses, with the general postural defects. No doubt photographs would have been very helpful and the X-ray disclose many spinal abnormalities, but this was impossible.

Inspection (70, 75): The boy was placed in the best available light, facing a mirror, so that any physical defects could be brought to his notice. Standing in a natural position, arms at side, the weight equally on both legs, the body was viewed from the front, side and rear, noting the posture, carriage, symmetry and general contour; comparing on both sides the outline from the axilla to the crest of the ilium,

whether one was flatter or more curved than the other, whether one arm hung further from the side than the other. If asymmetry or lateral displacement of the trunk was present with a change in body outline, it was considered, as stated by Lovett (70), a presumptive evidence of a lateral curve.

Posture: Whether good, fairly good, fair, or poor.

In examining for postural defects, the degree was considered, as well as its relation to other defects and abnormal conditions, and in the following order:

a. Head: The habitual position, whether forward, tipped to one side, or held rotated.

b. Chest: Whether flat and presence of any abnormalities of the sternum or ribs.

c. Shoulders: Round-Kyphosis,—whether there was round back or round hollow back.

Shoulders: Level of—whether one was higher than the other, and if this was a constant position. Lovett (70) says: "Elevation of one shoulder is generally a sign of lateral curvature, but may exist rarely with no perceptible curve."

d. Scapulae: Whether prominent and if two sides compared. Relative distance from spine, if one was low, or one or both displaced forward.

e. Lordosis: Whether alone, or associated with prominent abdomen.

f. Hips: Whether there was prominence of one hip, or any tilting of the pelvis.

g. Spine: The spinous processes of the vertebrae, beginning at the fifth cervical to the last lumbar, were marked with a flesh pencil, and an imaginary perpendicular erected from the cleft between the buttocks, to observe lateral deviations of the spinal column. If any deviation was present the boy was asked, first,—to bend forward to see if the curve was decreased or eliminated, or, exaggerated or increased; also to note if rotation was present and if increased, to what degree and where located, *i. e.*, on side of concavity or convexity; secondly—to bend sideways for muscular spasm and rigidity; thirdly—measurements for asymmetry (119) were taken in cases where time was afforded and facilities were present; fourthly—he was asked to assume his habitual posture of resting on one leg, and whether engaged in work of a weight-bearing nature and method of carrying his burden. Then a record was made of the kind, location, direction, and degree of the curve; and a note of any prominence or irregularity of the vertebrae.

h. Legs: Whether bow legs, knock knee, or rachitic tibia.

i. Feet: Whether flat footed.

Results: Following the method described above, 1100 boys in the department of Physical Education in the Worcester High Schools, were examined by me in the fall of 1913. The results are given in the following tables:

DEPARTMENT OF PHYSICAL EDUCATION FOR BOYS, WORCESTER HIGH SCHOOLS

Physical and Medical Examinations of 1100 boys, made in the fall of 1913

	Age	Height	Weight	Lung Capacity
Average.	15.8 yrs.	64.5 in.	113.3 lbs.	199.2 cu. in.
Minimum.	12.2 "	52.9 "	60 "	90 "
Maximum.	22.1 "	75 "	197 "	330 "

The average of all the boys, for each year, is as follows:

	No. of Boys	Age	Height	Weight	Lung Capacity
1913.	1100	15.8 yrs.	64.5 in.	113.3 lbs.	199.2 cu. in.
1912.	1156	15.9 "	64.5 "	113.2 "	196.5 "
1911.	1100	15.7 "	63 "	107 "	185 "

The average of the boys who were examined in 1911 and 1912 (both years) is as follows:

	No. of Boys	Height	Weight	Lung Capacity
1912.	723	65 in.	117 lbs.	205.6 cu. in.
1911.	723	62.9 "	106.8 "	182 "
Increase.		2.1 in.	10.2 lbs.	23.6 cu. in.

The average of the boys who were examined in 1911 and 1913 (both years) is as follows:

	No. of Boys	Height	Weight	Lung Capacity
1913.	400	67 in.	127 lbs.	229.1 cu. in.
1911.	400	63.4 "	107 "	180 "
Increase.		3.6 in.	20 lbs.	49.1 cu. in.

Postural defects:

Head forward	719 = 65%
Flat chest	378 = 34%
Scapular prominent	416 = 38%
Lordosis.	407 = 37%
Round shoulders	936 = 85%
(slight 166 = 15%, fairly marked 658 = 60%, marked 112 = 10%)	
Shoulder low	956 = 87%
Right 768 = 70% (slight 189 = 17%, fairly marked 534 = 49%, marked 45 = 4%)	
Left 188 = 17% (slight 41 = 3.7%, fairly marked 144 = 13%, marked 3 = .3%)	
Prominent hip	930 = 85%
Right 771 = 70% (slight 153 = 14%, fairly marked 553 = 50%, marked 65 = 6%)	
Left 159 = 15% (slight 33 = 3%, fairly marked 117 = 11%, marked 9 = 1%)	

Scolioses:

Total number of curves.....	902
Functional curves	595 = 66%
Dorsal 28 = 3%—Right 9 = 1% (slight 2, fairly marked 7)	
Left 19 = 2% (slight 10, fairly marked 9)	
Lumbar 59 = 6.5%—Right 20 = 2% (slight 7, fairly marked 13)	
Left 39 = 4.5% (slight 23, fairly marked 16)	
Dorsolumbar 50 = 5.5%—Right 10 = 1% (slight 2, fairly marked 7, marked 1)	
Left 39 = 4.5% (slight 5, fairly marked 29, marked 6)	
Total 458 = 51%—Right 52 = 6% (slight 20, fairly marked 32, marked —)	
Left 406 = 45% (slight 121, fairly marked 281, marked 4)	
Structural Curves	307 = 34%
Dorsal 4 = 4%—Right 2 = .2% (slight —, fairly marked 2)	
Left 2 = .2% (slight —, fairly marked 2)	
Cervicodorsal 2 = 2%—Right 2 = .2% (slight —, fairly marked 2)	
Lumbar 3 = .3%—Right 1 = .1% (slight —, fairly marked 1)	
Left 2 = .2% (slight —, fairly marked 2)	
Dorsolumbar 33 = 3.7%—Right 10 = 1% (slight 2, fairly marked 8)	
Left 23 = 2.7% (slight 3, fairly marked 20)	
Lumbosacral 2 = .2%—Right 2 = .2% (slight —, fairly marked 2)	
Right dorsal—left lumbar 151 = 16.7% (slight 103, fairly marked 48)	
Right cervicodorsal—left dorsolumbar 3 = .3% (slight —, fairly marked 3)	
Left dorsal—right lumbar 103 = 11.6% (slight 59, fairly marked 44)	
Left cervicodorsal—right dorsolumbar 4 = 4% (slight —, fairly marked 4)	
Right cervicodorsal—left dorsal—right dorsolumbar 2 = .2% (fairly marked 2)	

Scolioses:

Total number of curves.....	902
Scoliosis and rickets.	402 = 44.5%
Scoliosis and poor posture	401 = 44.5%
Scoliosis and poor muscular function.....	242 = 27%
Scoliosis, poor posture and poor muscular function	222 = 24.5%
Scoliosis and weight bearing occupation.....	269 = 30%
Rickets and structural curves.....	226 = 25%
Occupation and rickets.	124 = 14%
Occupation and poor posture	169 = 19%
Occupation and poor muscular function.....	136 = 15%
Occupation, poor posture and rickets.....	91 = 9%
Occupation, poor posture and poor muscular function	88 = 9%
Occupation, poor muscular function and rickets...	70 = 8%

Posture:

Good 129 = 12%, fairly good 167 = 15%, fair 394 = 36%, poor 410 = 37%

Muscular function:

Good 243 = 22%, fairly good 205 = 19%, fair 401 = 36%, poor 251 = 23%

Teeth:

Good 478 = 43%, fairly good 197 = 18%, fair 316 = 29%, poor 109 = 10%

Abnormal conditions:

137 = 12.6%

Heart:

Weak 19 = 2%, rapid 42 = 4%, irregular 45 = 4%, mitral systolic murmur 28 = 2.4%, aortic diastolic murmur 3 = .2%

Nasal obstruction 68 = 6%

Large tonsils 97 = 9%

Hernia. 15 = 1.3%

Phimosis. 18 = 1.6%

Varicocele. 54 = 5%

Flat foot 437 = 40%

(slight 214 = 19.5%, fairly marked 208 = 19%, marked 15 = 1.5%)

Osseous abnormalities:

Pigeon breast 243 = 22%, funnell chest 8 = .7%, prominent sternum 21 = 2%, prominent ribs 16 = 1.5%, lateral groove 56 = 5%, knock knee 353 = 32%, prominent vertebrae 24 = 2%, bow legs 67 = 6%

History of eye trouble..... 154 = 14%

Wear glasses 86 = 8%

History of ear trouble..... 46 = 4%

History of diseases:

Rickets (history or osseous evidence of) 434 = 39.5%, measles 733 = 66.5%, scarlet fever 105 = 9.5%, diphtheria 90 = 8%, pneumonia 91 = 8%, pleurisy 18 = 1.5%, rheumatism 46 = 4%, tonsilitis 219 = 20%, bronchitis 103 = 9.5%, headache 306 = 28%, nasal catarrh 94 = 8.5%, typhoid fever 21 = 2%, nervous prostration 7 = .6%.

History of fractures:

Arm 8 = .7%, elbow 17 = 1.5%, forearm 18 = 1.7%, wrist 28 = 2.6%, thigh 3 = .3%, leg 12 = 1%, clavicle 18 = 1.7%

History of operations:

Adenoids 172 = 15.6%, tonsils 224 = 20.3%, adenitis 23 = 2%
pleurisy 4 = .3%, hernia 22 = 2%, appendix 24 = 2%, kidney 1 = .1%

Use of tobacco:

198 = 18%

Pipe 89 = 8%, cigarette 156 = 14%, cigar 64 = 6%, chewing 12 = 1%

Use of stimulants:

792 = 72%

Tea 162 = 15%, coffee 298 = 27%, tea and coffee 332 = 30%

Engaged in weight bearing occupation:

277 = 25%

Newspapers 186 = 17%, packages 49 = 4.4%, groceries 26 = 2.3%, milk 16 = 1.3%

Observation: In making observations or comparisons, it is essential that one should have a standard. "In different persons healthy spines may be as unlike as any of their features." There are several interesting descriptions of normal types and, as may be expected, these vary to some extent. A type of normal posture is well illustrated by Staffel (102),

a method of determining the position of the centre of gravity, in its relation to certain bony landmarks in the erect position, is given by Reynolds and Lovett (89), and the correct attitude described by Dr. Goldthwait (47). I have accepted these standards for my investigations.

Observations during the examination show that there are some boys in the High Schools who have a good physical development; but that the average boy is poorly developed in the chest, arms, and shoulders. Many carry the head forward, have round shoulders, flat chest, one shoulder and scapula low, or a hip prominent, with a more or less degree of lordosis and prominent abdomen. Lateral curvature exists in a large number of cases.

Postural defects are far more common among boys than is generally known. Some have no idea they present poor posture until the condition is called to their attention. In many cases while aware of being somewhat round-shouldered they were more or less ignorant of having a shoulder low, a hip prominent, or lateral curvature of the spine.

In the examination of the spine for lateral deviation, four factors were constantly in mind.

- I. History or osseous evidence of rickets.
- II. The habitual posture.
- III. The general muscular function.
- IV. If engaged in work that would bear influence on posture, or symmetrical development, and more especially weight-bearing occupations and method of carrying one's burden.

There are many varied forms of classification of curvatures. For my investigation, I accepted the one used by Dr. Lovett (73) and approved by Dr. Burnham. Dr. Lovett says: "The name scoliosis or lateral curvature covers more than one type of deviation and the division between the groups is clearer than between most functional and organic affections of the same structure or organ."

It is as follows: First, Functional, also spoken of as postural or total scoliosis, called by some faulty attitude, or "false" scoliosis, a term used by the more recent German writers. This group includes all curves in which for the most part the associated characteristic signs were present. The spine is apparently structurally normal, but curved to one side owing to a defect in lateral balance due to some anatomical bodily asymmetry. Second, Structural: (1) curves where the changes are comparatively slight and seem no more than would be accounted for by the maintaining of a normally growing spinal column in a faulty attitude over a period

of years. These cases are often spoken of as "Static" and do not imply in general, pathological conditions in bone or elsewhere: (2) curves due to conditions causing definite pathological changes in the bone.

We term "curvatures" any deviation of the spine from the normal curves. Lateral curves often lead to more severe deformities. Postural or "false" scoliosis should not be confused with real, organic or structural scoliosis. Bad posture is to a great extent voluntary, changeable, and depends largely upon muscular development and leads to more positive signs of scoliosis which may be present. If the muscles are symmetrical there is an increase in the antero-posterior or normal physiological curves and we have round back or round hollow back. If there is asymmetry in structural elements or muscular balance there occurs a lateral bend of the spine.

The typical functional curve presented a type somewhat of this sort: head inclined forward, more or less round shoulders (kyphosis), in several cases, flat chest with scapulae prominent and lordosis. Often a back of the round hollow type, a shoulder low and scapula low and hip prominent on the same side and a total curve convex to the opposite side. Often a slight rotation on the side of the concavity. In some cases there was displacement of the trunk to the side of the concavity of the curve. This curve was almost or entirely eliminated on bending the trunk forward, depending somewhat upon the degree of the curve. Several cases showed the right hip drawn up, making the legs apparently of different lengths, but the measurements showed no shortening.

The characteristic sign of a structural curve is the presence of a backward prominence of the chest or loin on the convex side of the lateral curve. The majority of cases were of a rather slight degree, those of the dorsolumbar type seemed, in part, to be in or just over the border line, of the transitory stage.

With the increased poor posture, kyphosis, lordosis, and scoliosis, the abdomen was prominent and no doubt in these cases a more careful examination would reveal a more or less degree of visceroptosis.

The results show that 39.5 per cent of the 1100 boys examined have a history or osseous evidence of rickets; it was impossible to obtain definite information in regard to rickets in all cases. Thirty-seven per cent have poor posture and had I considered the cases of fair posture this percentage would be doubled. Twenty-three per cent have poor muscular function, and had I considered fair muscular function, the percentage would be increased three times. So would there also be an increased percentage in all other statistics in which

these two latter factors are involved. Twenty-five per cent are engaged in work of a weight-bearing nature that decidedly influenced posture and symmetrical development. In many cases two or three of these factors were present and in some cases, as shown by the statistics, all were present.

There were 902 scoliotic cases, of which 66 per cent, or 54 per cent of all the boys examined, have a more or less functional lateral deviation of the spine, and 34 per cent, or 28 per cent of the 1100 boys examined have curved or twisted backs of a more or less degree. About 40 per cent were slight, 58 per cent fairly marked, and 2 per cent marked. The total curves represent 51 per cent of all cases. Compound curves are about 23 per cent of all cases.

Many of the curves under the dorsolumbar of the functional type, no doubt could be called total and some low dorsal or lumbar, for seldom a curve is found in the lower dorsal region that does not involve some of the lumbar vertebrae and often a lumbar curve involves several of the dorsal vertebrae. These curves may be in the initial stage of passing from a total functional curve to a structural curve, since some of them showed one or more of the characteristic signs accompanying the functional curve absent.

A subsequent 100 examinations of boys entering in February, 1914, gave the following results: 48 per cent showed evidence of rickets; 18 per cent have poor posture; 18 per cent have poor muscular function; 19 per cent are engaged in work of a weight-bearing nature. There were 40 scoliotic cases, of which 27 or 67 per cent have a functional curve (25 of the 27 were of the total type) and 13 or 33 per cent have structural scoliosis. The proportion of functional to structural curves was the same as in the 1100 examinations.

In general, scoliosis occurred in boys who are weak, poorly nourished, lacking bone and muscle resistance in addition to having faulty posture. Often the history shows diseases and other defects which greatly reduce the vigor and health of the child, decrease his resistance to abnormal and long-continued strain and predispose him to spinal curvature.

In order to avoid or prevent a condition it is necessary to know something of its causes. I studied my results with special reference to etiology. The data indicate the following chief causes: 1, rickets; 2, poor posture; 3, poor muscular function; 4, weight-bearing occupations. The statistics show the relative influence of each of these factors.

This general result of my data is in harmony with what Doctors Böhm and Kirsch of Germany, Dr. Chlumsky of Austria, and Doctors Bradford and Lovett of Boston, and others have found in their recent investigations.

Another point should be noted, that is the influence of adolescent rachitis. This is significant in my research from the point of view of etiology, since the majority of boys were in the adolescent stage and their nutrition seemed to be on a par with their general muscular development. Statistics show that about 40 per cent have fairly good or better muscular development, and about 60 per cent have fair or poor muscular development.

Sir James Paget said: "One may make too light of a case of lateral curvature, and be ready to think and say 'There's nothing the matter.' The great difficulty is in proving a negative, and as a general rule, it requires much more time and care in examining a patient to justify a decision that there is no disease than it does to ascertain what the disease is if there be any." I may be permitted to say that often I spent more time in deciding that there was no curve, or that the curve was of a functional nature, than in well-marked curves, for when a case is decidedly evident there is little difficulty in diagnosis.

A résumé of my results, in a word, is that in 1100 examinations there were 902 scoliotic cases, of which 66 per cent were of a functional type and 34 per cent of a structural nature. The important etiological factors are rickets, poor posture, poor muscular function and weight-bearing occupations.

Thus we may see that the problem of the etiology of scoliosis is a very complex one. I have attempted merely to make one slight contribution toward its solution. A few years ago there was a wide diversity of opinion; to-day the leading authorities are arriving at definite conclusions, and this has only been made possible through persistent study and careful research.

CONCLUSION

Prophylaxis: (8, 13, 14, 20b, 23, 30a, 32, 49, 54, 56, 67, 75, 91, 97, 112, 114, 119, 120).

We should be concerned with the prolongation of life and more so with the preservation of health. "Not cure, but prevention; not correction, but nurture," is the modern conception of efficiency.

Prophylaxis of deformities, like the education of children, should begin before they are born (91). Every child is entitled to a birthright of a good, strong, healthy, constitution, and such guardianship of its early life as would have judgment enough to know and take interest to see that all is well with the child physically and morally.

That scoliosis can largely be prevented, especially the ac-

quired forms, is the opinion of European and American authorities (114), who have made a careful study into the etiology of scoliosis among children. "In the entire domain of medicine and surgery, prophylaxis has never done so much good as prophylaxis of scoliosis."

One of the most important functions of any system of education, says Dr. Bradford (14), is to furnish to the community the constant supply of well-trained individuals with the capacity and physical strength capable of enabling them to take up the responsibilities and work that the community demands. Whatever occupation an individual is destined to undertake, an important qualification is sufficient physical strength to meet the burden of toil that comes and the strength and stability of the back is by no means of the least importance.

The carriage of the spine, writes Hübscher (54), is typical of the whole external appearance of mankind. Slothfulness and strength of will, depression and frankness, gloom and happy temperament, laziness and work, weakness and strength, youth and age, put their stamp upon the back, and that too, for generations.

"A sound mind in a sound body" is a good maxim, but not every one inherits a sound mind or a sound body. The human organism is not a perfect machine. In general we find few individuals who are absolutely healthy. Some of us inherit certain physical defects, others acquire them through bodily abuse, bad habits, improper nourishment, accidents, faulty modes of living, etc.

The human body is built and operates according to definite laws, and discord of the normal physiology can often be traced to disobedience of these laws. The spine is the chief support of the body, and when there is disorder in the spine the whole organism may be affected. Weakness in the spine permits the shoulders to become stooped, the chest contracted, and the vital organs drop below their normal position in the body. Many have the framework without the muscles to keep the body in position.

Dr. McKenzie (75) writes: "The integrity of the spine is protected against the onset of deformity by three lines of defense of increasing strength: (1) the muscles forming an advance mobile series of outposts brought into service in relays, powerfully but intermittently; (2) the ligaments more resistant, but less mobile, require long continued and persistent attacks to overcome their normal protective action; (3) the bones which may be compared to a citadel, yielding to the influence of deformity only after the other two lines of defense have long since been carried. When they have

adapted themselves to the deformity and have become set in their destruction, treatment can hope to be, at best, only cosmetic in character, to conceal the deformity rather than to correct it."

The flexible spinal column, says Keppler (59), is so formed by nature as to allow extreme latitude of body motion in nearly every direction. Moreover it bears, in whole or in part, continuous strain from the superimposed weight and general muscular activity. It is therefore natural that weakness or injury, however trivial, will more easily affect this structure than any other portion of the skeleton. On account of its length, flexibility and supportive function even the slightest deviation from the normal may easily, in time, develop into lasting deformity. The outgrowing of spinal curvature, without assistance, is usually out of the question and early intervention is the safest means to prevent more or less marked ultimate body deformity.

No deviation of the spine should be allowed to correct itself; and close observation of children during growth and puberty should be made the rule, rather than the exception.

The correct attitude (47) in the upright position, is the poise in which there is the least strain, with the body held so that it is made as tall as possible without raising onto the toes. In this position the head is erect, the shoulders are thrown back so that their centre is distinctly posterior to the centre of gravity, the chest is high, the abdomen is flat and the spinal curves are slightly convex backward in the dorsal region and convex forward in the lumbar region. The pelvis is inclined forward. The knees are straight and the weight is received on the foot, so that the heels rest lightly, and the chief weight is thrown upon the ball of the foot.

Hygienic Suggestions: In conclusion there are many factors and conditions to be considered in the prevention of scoliosis, and among them the following:

1. The proper early hygiene of the child, which is very important, especially his nutrition, the avoidance of rickets and all the predisposing or exciting causes of weakness as well as of deformity. In children with rachitic tendencies, attention should be directed to the spine in diagnosis and therapy.

2. The infant's spine should be examined (23) as a routine measure and any tendency to scoliosis should be recognized at once and corrected before it becomes chronic.

3. Determining and correcting a possible exciting cause, such as congenital or acquired defect; a tilting head due either to torticollis, deafness of one ear, or disturbed vision; a re-

ceding chin from adenoids; or a faulty position of the spine, due either to shortness of one leg, fracture, disease, paralysis, etc.

4. Jansen (56) is of the opinion that children should not sit before they can walk. The child when a few months old should be allowed to lie on its ventral parts and encouraged to lift the head and strengthen the muscles of the back. The child will learn to crawl and creep before it stands. Thus the child should get on its legs by its ventral parts, not by its posterior parts. The phylogenetic process of development of the human gait should be repeated ontogenetically.

5. A normal child properly fed and looked after from infancy will not develop deformities, any more than it can get rickets, scurvy, etc. Therefore the same rule applies to them all; appropriate food and suitable exercises in a healthy environment. On the whole the same measures which are applied in order to prevent the formation of scoliosis, will also tend to cure it if carried out sufficiently long and with adequate energy.

6. The child should have out-door life, abundance of fresh air and sunshine, with physical activity in the form of play. Good, healthful, and well-equipped playgrounds and gymnasia under competent supervision.

7. Physical exercises (68) well selected, regulated and directed, supplemented by good habits and hygienic conditions of life, will strengthen the body and promote normal growth and development.

8. An exposition of the combination of fresh air, bright sunshine, clean and wholesome food, sanitary environment, hygienic care of the body and regular and well-directed physical exercise, will promote proper development of the body, give tone and power to the muscles, increase the vital functions and materially improve the general health.

9. Good posture, Miss Bancroft (6, p. 2) says, is necessary, (1) for full vigor and health; (2) to prevent waste of energy in maintaining the upright position in any of the activities of life; and (3) with children to admit proper growth and development. The best health and greatest efficiency of the individual are possible only when the body is used in such poise that there is no undue strain or interference with any of the structures.

The child's attitude while sitting, standing, walking and sleeping should be observed and corrected, if found faulty.

10. There should be no superimposed weight or carrying of heavy books or other burdens that tend toward asymmetrical development. Children should be taught to carry books

in a knapsack strapped on the back, each side of which is equally weighted.

11. In infancy the clothing should be of light weight with no constricting bands; later no suspenders or heavy dresses. Have the support upon the base of the neck instead of tip of the shoulders.

12. There should be complete coöperation of the home and the school. They should work together and in harmony. The parents, or one in charge of the child, as well as school teachers, should be informed and instructed in hygiene and prophylaxis.

13. In addition to what has been said before as to what the school can do to prevent scoliosis, Bosse (13) concludes that the school should be equipped as well for straightening bodies of children as for enlightening their minds, for by preventing further and extreme deformities much can be saved the state. While the essential object of school inspection, writes Newmayer (80), is the detection of contagious diseases, among the pupils, of no less importance is the diagnosis and correction of physical defects.

14. The ideal would be, Haglund (49) suggests, to have a medical man or woman connected with the school, giving up practice, to take charge of the physical training of the pupils and diagnose incipient curvature. He advocates that medical students be instructed in orthopedic gymnastics. Then, he says, the physician would appreciate better the important matters of physical training, prevention, diagnosis and correction of deformities and the necessity for the technique of orthopedic treatment.

15. The prevention of the deformity in early childhood is much easier than correcting the deformity, especially in our schools, where the faulty attitudes leading to this condition are frequently found. The student should be encouraged to maintain a normal erect posture, where the body is firmly supported and the head and shoulders held erect, this being vitally important for unhindered respiration, for normal circulation, and maintaining the proper position and normal development of the internal organs.

16. Children who have suffered from rickets (20a), as infants, are more liable to develop spinal curvature, flat foot, and the like, and hence should receive special care during the school period with regard to diet, posture, physical exercise and general hygienic surroundings.

17. The proper lighting and ventilating of school rooms, hygienic seats and desks that make a normal posture easy and natural, proper methods of reading and writing, shorter

periods of sitting and more frequent intervals for recess outdoors should be provided.

Finally, in the words of Dr. Burnham (20b), the children should receive "above all, intelligent methods of instruction and training. This is one of the cases where the function of the teacher and the hygienist cannot be separated, and where it is the duty of the school to develop a permanent habit of health."

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THE PRESENT STATUS OF THE JUNIOR HIGH SCHOOL

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The term "Junior High School" is applied to a unit of the school system composed usually of the last two grammar grades and the first year of the high school. This division is organized with departmental teaching, differentiated curricula, and other features which formerly belonged to the high school. "Intermediate School" is preferred to "Junior High School" in many places, although the terms are practically synonymous. It is the purpose of this article to give the condition with reference to this movement as it exists at present.

To get in touch with the school systems that include junior or intermediate departments, requests were sent to the different state superintendents for information regarding such cities in their respective states. A list was also made of cities referred to in the government bulletins, educational periodicals, and other literature. Syllabi and requests for printed matter were then mailed to the different city superintendents. They were also asked to report any city in their state that had the junior organization. In this way it seems that the names of practically all the cities have been procured.

One hundred and thirty-five places were so reported, and replies were received from one hundred and eight. It was found that some of the one hundred and thirty-five are not organized upon this basis, and that others will be organized as soon as preparations can be made. Direct information has been received that this movement exists in twenty-three states, and five more are reported either as having junior schools, or as preparing to organize them. Returns have been received from sixty-eight cities that have the junior or intermediate school in actual operation. Minnesota, with six systems, Indiana with six, California with eight, Wisconsin and Kansas with nine each, seem to be the states having the largest number of these schools. Besides the exceptional response to the questionnaire, school officials have been most generous in supplying added material in the form of letters, courses of study, and other special literature.

The following cities have the junior or intermediate school. The figures denote the grades included.

Aurora (East), Ill., 8.	Kalamazoo, Mich., 7-8-9.
Austin, Minn., 7-8-9.	LaCrosse, Mich., 7-8.
Berkeley, Cal., 7-8-9.	Lewiston, Idaho, 7-8-9.
Bismarck, N. D., 7-8. 9 later.	Madison, Ind., 6-7-8.
Boston, Mass., 7-8. 9 later.	Madison (Wis. H. S.), 7-8-9.
Bristol, Va., 5-6-7.	Manhattan, Kans., 7-8.
Chanute, Kan., 7-8-9.	Manitowac, Wis., 8-9.
Chico, Cal., 8-9.	Mohnton, Penn., 7-8-9.
Clinton, Ia., 8-9.	Muncie, Ind., 6-7-8.
Cokato, Minn., 7-8-9.	Muskegon, Mich., 7-8-9.
Columbia, Tenn., 7-8.	Muskogee, Ok., 7-8-9.
Columbus, O., 7-8-9.	Neodesha, Kan., 7-8-9.
Concord, N. H., 7-8.	New Kensington, Penn., 7-8-9.
Crawfordsville, Ind., 7-8.	Newton, Kan., 8.
Crookston, Minn., 7-8.	Norwalk, Conn., 7-8-9.
Curwensville, Penn., 7-8-9.	Oakland, Cal., 7-8.
Dayton, O., 9.	Ogden, Utah, 7-8-9.
Decatur, Ill.	Palo Alto, Cal., 7-8-9B.
De Pere, Wis., 7-8.	Quincy, Ill., 7-8-9.
Detroit, Mich., 7-8-9.	Rhineland, Wis., 7-8. 9 later.
Devil's Lake, N. D., 7-8.	Richmond, Ind., 7-8.
Edgerton, Wis.	Rochester, Minn., 7-8-9.
Ephrata, Penn.	Salt Lake City, Utah, 7-8-9.
Evansville, Ind., 8-9. 7 later.	San Antonio, Tex., 8.
Faribault, Minn., 7-8-9.	Santa Anna, Cal., 7-8.
Fort Scott, Kan., 7-8.	Santa Rosa, Cal.
Fresno, Cal., 7-8.	Seymour, Ind., 7-8.
Globe, Ariz.	Solvay, N. Y., 7-8. 9 later.
Grafton, N. D., 7-8.	Topeka, Kan., 7-8. 9 later.
Grand Rapids, Mich., 7-8-9.	Trenton, N. J., 7-8-9-10.
Hackensack, N. J., 7-8.	Webster, N. D., 7-8-9.
Hays, Kan., 7-8-9.	Winfield, Kan., 7-8.
Houston, Tex., 7-8-9.	Worcester, Mass., 7-8.
Hutchinson, Minn., 7-8.	

Santa Rosa, Cal., Globe, Ariz., Ephrata, Penn., and Edgerton, Wis., have the last six years organized into the high school department.

In some of these cities the junior high school is being considered, while others will put it into operation next year.

Atlantic City, N. J.	Minot, N. D.
Bayonne, N. J.	New Bedford, Mass.
Beverly, Mass.	Philadelphia, Penn.
Camden, N. J.	Portland, Ore.
Danville, Va.	River Falls, Wis.
East Orange, N. J.	Roanoke, Va.
Goshen, Ind.	Saginaw (East), Mich.
Jackson, Mich.	Walla Walla, Wash.
Kansas City, Kan.	Wichita, Kan.
Little Rock, Ark.	

San Francisco, Cal., Salina, Kan., and Ely, Minn., are partially organized. The department of education at the University of Wyoming maintains a six-year high school.

Reported as having the junior high school.

Anderson, Ind.	Hutchinson, Kan.
Arkansas City, Kan.	Jackson, Tenn.
Aurora (West), Ill.	Langdon, N. D.
Boise, Idaho.	McMinnville, Ore.
Clarksville, Tenn.	Malden, Mo.
Cloquet, Minn.	Marion, Ind.
Coffeyville, Kan.	Pocatello, Idaho.
Fergus Falls, Minn.	Santa Barbara, Cal.
Gothenburg, Neb.	Springfield, Ill.
Horicon, Wis.	

The junior high school has been recommended as a result of the following surveys: Portland, Oregon; New York City; Boise, Idaho; Springfield, Illinois; Vermont; Butte, Montana. The National Association of State Universities has declared in favor of the plan as have the State Teachers' Associations of Washington, Oregon, Idaho, and Montana. There seems to be no question but that a great many schools will be organized upon this basis within the next few years.

Cities from the above lists having the junior college.

Aurora, Ill., 1 yr.	Fresno, Cal., 2 yrs.
Columbia, Tenn., 1 yr.	Grand Rapids, Mich., 2 yrs.
Evansville, Ind., 2 yrs.	Muskogee, Ok., 1 yr.

Contemplating this feature.

Austin, Minn.	Neodesha, Kan.
Crawfordsville, Ind.	Quincy, Ill.
Curwensville, Penn.	Winfield, Kan.
Devil's Lake, N. D.	

It has been advocated at LaCrosse, and will probably be put in operation when the colleges and universities give credit for work done. Detroit would have one if it were not against the law. Bismarck will probably offer the first year next year. Worcester, Mass., Chanute, Kan., Trenton, N. J., Webster, N. D., and Faribault, Minn., reply "not at present," and Concord, N. H., is favorably disposed toward it.

The junior high school is a recent product. Twenty-two of the 68 schools reporting were established in 1914; 14 in 1913; 5 in 1912; 5 in 1911; 3 in 1910; and 2 in 1909. Columbus in 1909, Berkeley and Concord in 1910, and Los Angeles in 1911, are the ones usually referred to as the pioneers in the field. However, the movement was more or less under way prior to this, as Crawfordsville mentions 1907, Ogden 1909, and Madison, Indiana, 1908, as the time the readjustment began. Several cities had departmental teaching in the last grammar grades much earlier than this, and if not desig-

nated as a junior high school or an intermediate school, had many features of the present organization. Kalamazoo has had the seventh and eighth grades departmentalized for twenty-five years, Worcester since 1898, and Fresno, Muncie, and Fort Scott have had essentially their organization for a number of years.

GRADES FOUND IN JUNIOR HIGH SCHOOL

The methods of grouping are due in a large measure to local conditions, but some prefer divisions other than the segregation of the seventh, eighth and ninth grades, although this is favored more than any other division. In some of the larger cities the idea is to arrange for junior high schools in different centers, a plan that obviates distance and allows any grouping that may be desired. In other places, however, the seventh and eighth grades, and possibly the ninth, are in the buildings with the lower classes. Oakland has one distinct junior high school, and another school that has grades six to ten, inclusive. Besides these, there are four large elementary schools in which the work of the seventh and eighth grades is organized on the junior plan. The latter schools have given such satisfaction thus far that the intention now is to gradually reorganize all the larger elementary schools on this plan.

Again, one plant may house the last six grades. An example of this is found in Evansville, Indiana, where the arrangement is not one of necessity, but of preference. The advantages of this arrangement are that it allows one teacher to work in any of the grades; and it reduces the feeling on the part of the pupils that there is any real division between the junior and senior schools. Rochester, Minnesota, is an example of this same grouping, but the superintendent is convinced that the plan would work out more successfully if the two schools could be separated.

Summarizing the actual conditions, there are 23 schools organized with the seventh and eighth grades in the junior high school, and 27 with the seventh, eighth and ninth. Various other groupings are found, but these are more frequently the result of local conditions. The larger cities prefer a separate building, but it is doubtful if this is the case in the smaller places. In a little less than one-third of the cases the junior high school has its own building, but in the majority of the cases it is found in the same building with the last three high school grades. About half the time it has its own principal, whether or not it is housed with the senior school, and in a little less than half the cases one principal

supervises the six grades. In a few places the junior school is in a building with the elementary classes with one principal for all; and in a few instances the junior principals are assistants to a principal of high schools.

ENTRANCE REQUIREMENTS

Probably one of the most fundamental reasons for the junior high school is that pupils may be given school work that they should have. The usual method of advancement in the grades is by promotion, which ordinarily means that a definite amount of work has been done, and a corresponding mark or promotion card given. The question has been raised whether or not past accomplishment, and especially the length of time actually spent in reaching a certain point in school, have any more significance than the physiological or psychological age, if as much. Moreover, it is well known that elimination occurs very frequently when the pupil reaches the age of fourteen, or thereabouts, and is two or more grades behind. It seems reasonable to expect, then, that superintendents would take this into account in admitting pupils to the junior high school.

One of the questions in the syllabus was: "Upon what do you make entrance to the junior high school depend?" The returns are as follows: 19 require "promotion"; 14 require "satisfactory completion" of preceding work; and 17 state definitely that factors other than the two just mentioned are taken into consideration. Superintendent Mackey, of Trenton, New Jersey, gives a reply that is typical of the last group: "Pupils who are regularly passed from the sixth to the seventh grade will be eligible to the junior school, and also all pupils, especially over-aged pupils, who are likely to get greater benefit from the course it offers than from the course open to them in other schools."

The Wisconsin High School makes practically no requirements as to previous work. An applicant is admitted if he possesses ability to read, write, and speak simple English with reasonable ease and accuracy; has good health; and is twelve years of age. Applicants under twelve receive special attention, and if they show a mental age of twelve years or above, they are admitted. Solvay, New York, has essentially the same requirements.

The following extract from the report of the survey of the Portland schools outlines a broad policy with regard to the placing of pupils:

"The most fundamental principle in this connection, is that instruction, both in content and in method, must be adapted to pupils' needs, to individual needs; not the instruction that a pupil has had,

but the instruction that he needs; not what a pupil has learned, but what he needs most to learn, must determine the placing of that pupil. Carried into actual practice, this means that when a pupil has reached in maturity and need the intermediate period, he is to be advanced to instruction appropriate to that period, whether he has completed the normal work of the elementary period or not; . . . Instruction must always fit the stage of development, even to the individual needs in that stage of development; elementary instruction is not suitable for children of the intermediate stage, nor is intermediate instruction suitable for youth of the secondary stage" (15, 164).

ENROLMENT FIGURES

School men have argued that with a different course of study, different requirements as to entrance, and a familiarity on the part of the pupils as to departmental teaching and other high school methods, a greater number would be held in school through the ninth grade and possibly through the entire course. Retardation and lack of interest as causes for elimination would in a large measure thus be met. Comparative figures as to failures under the old and the new plan could be obtained only in a very few instances, but these tend to show that there is less repetition under the new plan. Superintendents are practically unanimous in saying that there have been decided gains along this line. The increase in population, with many other factors contributing to increase the enrolment, makes it difficult to arrive at a fair conclusion as to what extent the junior high school has been operative in increasing attendance. The schools that have been reorganized within the last year have not had sufficient time to see what the results will be. Some superintendents, who have had the plan in operation a longer period, are not willing to attribute gains in enrolment to the reorganization, but in a majority of cases the junior high school is credited with being a powerful factor both in reducing the number of repeaters and in keeping pupils in school.

An attempt was made to secure enrolment figures for the seventh, eighth and ninth grades, and the total enrolment of the senior high school, under the new plan and under the old. The following summary shows comparisons made from data actually received:

Thirty-one schools show a loss of 17% from the seventh grade to the eighth grade. Ayres (2, 13) shows that the usual loss is 28.6%; Thorndike (17, 17), 32.5%.

Twenty-three schools show a loss of 20% from the eighth grade to the ninth; Ayres gives 28% as usual; Thorndike, 32.5%.

Twenty school systems show that the combined enrolment for the tenth, eleventh, and twelfth grades is 206% of the enrolment of the ninth grade. (These systems have the sev-

enth, eighth and ninth grades in the junior high school.) For each 1000 in the first grade, Ayres estimates that there are 189 in the ninth, 123 in the tenth, 81 in the eleventh, and 56 in the twelfth. For these figures, the combined enrolment of the tenth, eleventh and twelfth grades is 137% of the ninth.

The combined enrolment in 18 systems of the tenth, eleventh and twelfth grades is 63.3% of the enrolment of the seventh, eighth and ninth grades combined. (Seventh, eighth and ninth grades comprise the junior high school.) Ayres, 31.7%.

Thirteen school systems show that the total enrolment for the ninth, tenth, eleventh and twelfth grades is 251% of the eighth grade. (Seventh and eighth grades comprise junior high school.) Ayres, 171%.

Ten school systems show that the number of boys in the junior high school is 42% greater than it was under the old plan; and that the number of girls has increased 27%. The total increase in enrolment is 34%.

Fourteen school systems show an increase in the senior high school enrolment (both boys and girls) of 18%.

Thirty-nine cities enroll in the senior high school, a total of 18,514 students, of whom 45.6% are boys. Ayres gives 43% as the average percentage of boys.

Twelve cities show that the proportion of boys enrolled under the new plan is $1\frac{1}{4}\%$ more than under the old.

Los Angeles (not included in any of above figures).

Table showing the distribution in per cents of total enrolment:

	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
1910-11....	7.8	6.2	5.9	2.7	1.6	.8
1913-14....	7.7	7.7	4.9	3.0	2.1	1.5

	Grades 7-8-9	Grades 10-11-12
1910-11.....	19.9	5.1
1913-14.....	20.3	6.6

NOTES TO COURSES OF STUDY

1. Geography given with history.
2. Physical geography and general science run one-half year each.
3. Spelling; grammar; or spelling and writing with English.
4. Los Angeles offers: (1) A Literary-Scientific course, which leads to high school courses preparatory to colleges of letters and science; (2) Engineering preparatory, preparatory to high school courses in engineering; (3) Mechanic Arts, for boys mechanically inclined, who may or may not continue in school; (4) Home Economics, for girls who expect to become home makers, who may or may not continue in school; (5) Commercial, intended to prepare for the commercial course in high school, or to enter commercial work if they cannot continue in school. Different subjects are offered within the different courses, and electives are offered within the courses to a certain extent. Oral English is offered in the eighth and ninth in all the courses.
5. Lewiston, Idaho. "Beginning with the third junior year, all the work is elective except English. All work, however, must be elected by majors and minors. Five years' work is offered in Spanish, German and Latin and six years' work in shop work, which includes forging and actual construction work. Six years' high school work is offered in home economics. The senior high school industrial work for both boys and girls is made strongly vocational. Agriculture was introduced this year and two years' work is offered."
6. Oakland also offers Italian and nature study. Modern language is offered in the fifth and sixth grades in the University School.
7. Rochester, Minn., offers in addition to the subjects shown in the table: garment making in the seventh and dressmaking in the ninth; bench work in the seventh, furniture making and mechanical drawing in the eighth; mechanical drawing, carpentry and cabinet making in the eighth and ninth; and industrial history, harmony, and general agriculture, poultry and gardening in the ninth. These lines are carried through the tenth, eleventh, and twelfth grades in a very complete way.
8. Salt Lake City requires current events in all three years. Reading, writing, language, grammar and composition are given in the English courses.
9. Solvay, N. Y. "The work as we give it is divided into six separate courses. While often the same subjects may be required in every course, there may be considerable difference between the subject as given in one course and the same subject as given in another course. English, very similar to the elementary syllabus requirement, except that we teach less technical grammar, is given in the academic course in both the seventh and eighth grades, with still less technical grammar. English is required in the household and practical arts courses, and in the two vocational courses; but we give in these courses no technical grammar whatever. History in the academic course and commercial course follows the elementary syllabus requirements. History in the vocational courses, household and practical arts courses is much less complex, and gives more emphasis to inventions and commercial history. The study of commerce and industry (commercial geography) is rather similar throughout and is required in both seventh and eighth grades except in the vocational course, where it alternates with history. A wide divergence is found in arithmetic. The academic course takes commercial applications of percentage, but soon gets to treating it as algebra. They treat their mensuration as geometry. The commercial course spend all their time on commercial applications and arithmetic, particularly insisting on a high standard of accuracy and rapidity in computations. Drawing, too, differs between

the courses as does also the science work. The academic pupils all take German five times a week for two years. Commercial pupils take typewriting for two years, bookkeeping for one year. Household Arts pupils take two double periods of cooking and two double periods of sewing each week for two years. Practical arts pupils take four double periods a week of shop work and one double period of shop drawing for two years. The vocational pupils spend one-half of their time in practical work. The boys of the commercial and academic courses get one double period a week of shop work. The girls of these courses get one double period of cooking and one of sewing."

10. Course of study recommended for California schools, by Will C. Wood, Commissioner of Secondary Schools.

11. Outline of a general, a commercial, and a vocational course, recommended in the report of the commission that made a survey of the schools of Portland, Oregon. Subjects not shown in the table are freehand drawing, offered in the eighth and ninth grades of the general course; freehand drawing in the eighth and ninth years of the vocational course for girls. General science in the vocational course includes hygiene. In the ninth year in the vocational course elementary physics is the elementary science offered to boys and elementary chemistry for girls. Oral English is offered in the eighth and ninth years of all the courses.

12. Crookston, Minn., has academic, industrial and commercial courses in the junior high school. Subjects are differentiated as to courses.

13. The Wisconsin High School offers agriculture and biology in the ninth year. "As a further guide in the selection of studies, it should be clear at the outset that each pupil, beginning with the Fourth Class (the ninth grade), will be required to complete for graduation, in addition to the required English, at least three units of elective work in one of the following groups, and also at least one unit of elective work in at least two of the remaining groups: (A) History, (B) Mathematics, (C) Science, (D) Foreign Language. In deciding upon courses of study, pupils and parents are requested to keep in mind the general plan of the school. The six-year organization may, for guidance in arranging studies, be divided roughly into three two-year periods. At the beginning of each two-year period each pupil is permitted to make a new selection of studies in so far as changes desired are in agreement with the general requirements stated above. Within each two-year period the pupil's courses are relatively unchangeable. The aim is to map out at opportune times two-year courses in accordance with the best knowledge then available as to the pupil's capability and purpose. By this method the courses selected are intended to provide continued trial of a pupil's qualities, with a view to finding his best."

Courses of Study in Cities Not Included in the Table

Clinton, Ia., offers "(1) a High School Preparatory Course, for those who expect to continue their studies in high school after completing the ninth grade. For these pupils, three courses are offered—English, Latin, and German. But a pupil must be superior in his seventh grade work to have the option of entering upon a high school language study before the ninth grade. (2) A Vocational Course, for pupils who do not expect to continue in school longer than the ninth grade. For these pupils a full course in manual training for boys and a full course in home economics is offered for girls, two years in length. In the place of algebra, they are given industrial arithmetic and bookkeeping."

Norwalk, Conn. provides for "the differentiation of the work in the seventh, eighth and ninth years of the Junior School into well defined courses which continue throughout the Senior School. These courses are as follows: (1) Academic course, 6 years. (2) Commercial course, 2 years. (3) Commercial course, 6 years. (4) Manual Arts course, 6 years. (5) Manual Arts course, 2 years. Provision is made for continuation schools for those who cannot continue the regular work of the Junior School."

Trenton, N. J. "The plans for courses of study are not yet completed. We expect to have three courses of study that may be loosely classified as academic, commercial, and industrial or domestic. Some subjects in all these courses will be identical, and the electives will be mainly in the line of foreign language work for those who are to pursue the academic courses, commercial arithmetic, typewriting, bookkeeping, etc., for those electing the commercial course, and additional hours in shop and kitchen for boys or girls electing the industrial course. The fact that we have in this city a school of Industrial Art, supported by the city, has diverted to it from the public school pupils in most prevocational courses. Our Board is inclined to refer pupils to that school rather than amplify courses for them in the public schools."

Boston, Mass. "We have introduced into the seventh and eighth grades in all these districts the study of French or German. This work is optional with the pupils. The methods of teaching these subjects are distinctively oral or conversational type. It is confidently expected that most pupils who pursue either French or German for two years in the elementary grades will anticipate a full year of high school work, and receive credit therefor. We are studying how to correlate the work in English in the elementary grades with that of the high school. We find it more difficult here to anticipate high school work, but we are hopeful of completing arithmetic as such in six years; and that in the seventh and eighth grades we may teach mathematics. This mathematics includes arithmetic, very simple work in algebra and constructional geometry. Following this course, the first year mathematics in the high school should not be algebra, but should be mathematics, built upon the work in the grades. We are beginning to differentiate our work, and to segregate our pupils at the end of the sixth grade instead of at the end of the eighth. We hope eventually to have several courses beginning with the seventh grade which shall be offered to pupils—one for those who are to take cultural courses in the high schools, and another for those who are to take commercial work, and another for that heretofore neglected group of boys and girls who are compelled to enter the industrial or artisan world before, or at, the completion of the elementary school course. In our attempt at correlation we have had committees of high school teachers appointed to observe the work in modern languages and in English in the grades, to give suggestions relative to subject matter and methods, and finally to designate those districts where pupils do such work as to entitle them to advanced credits on entrance to the high schools. We call these classes at present Intermediate Classes, but we look forward to the time when we shall add to our seventh and eighth grades the ninth, or first year high school grade, and segregate these pupils in a building distinct from all the others. This is our interpretation of the junior high school which we eventually hope to establish."

The following is an extract from the report of the Com-

mittee on the Reorganization of the Public School system in Wisconsin.

"There seems to be quite general agreement that the common core of constants for the seventh and eighth grades in the new secondary school shall be: A. (1) English (with larger emphases upon literature suitable for adolescent development), Elementary Mathematics (including the simpler elements of observational Geometry and the algebraic treatment of the equation), and General Science—these three fields interlocked with History and Geography and so administered as to lead to more advanced courses in later years. (2) Some form of construction work for all pupils such as Manual Training, Domestic Science, Drawing or Agriculture, the latter so taught as 'to start with actual life for knowing and to come back to it for doing.' (3) Certain exercise in the form of music and physical education and other expressive activities required of all pupils.

"B. The zone of variables for the seventh and eighth grades depends upon the size of the school—the number of sections of pupils of the same grade. If two or more sections are found the choice of either a foreign language or commercial subjects may be given. Under some conditions the optional study may be given in extra assignment in constructive work. For the second cycle, the ninth and tenth grades: English and Mathematics are suggested for the prescribed studies. The optional field varies depending upon the size of the school. For the third cycle, the eleventh and twelfth grades: English, for at least three periods a week may constitute the only prescribed study.

"Bearing in mind the insistence of the committee that courses of study be selected with a view of pursuing them for a period of two years, it will be seen that a pupil's time and energy may be wisely distributed throughout the six-year system in the representative major fields of secondary education, English, Mathematics, History and Civics, Science, Language, and Constructive Activities, including Agriculture and Commercial Branches."

In the recent survey of education in Vermont it is advocated that the smaller high schools, that are with great difficulty and expense maintaining a four-year high school course, give up the last two years, and that they consolidate the seventh and eighth grades and the first two years of the high school "into a compact, closely articulated school unit, to be known possibly, as a junior or intermediate high school." A central school could then be organized in a sufficiently large district, open to and designed for the needs of the entire district. Its curriculum up through the junior school would be adapted to the needs of its immediate locality. The same would be true of the other schools in the district. Furthermore, this "course (in the junior high school) should represent acquirement and training of recognized value to such pupils as may receive no further education. Moreover, this value must be such as can be appreciated by the average parent, and to no slight degree, by the pupil himself. Second, the curriculum should be based predominately upon the environment and find its points of departure and return in community activities and needs. Third, the course must fit

in with the central school, through which the avenue to higher education must be kept open" (12, 100).

FEATURES OF OTHER SCHOOL SYSTEMS

Some schools that do not have a regular junior high school organization are arranged in such a way as to include a part, if not all, of its advantages. Springfield, Mass., offers in the eighth and ninth grades, German and French to especially capable pupils and in the ninth grade all pupils take either commercial arithmetic or algebra, according to which high school they expect later to attend. Plans are now being made to introduce first year high school science into the ninth grades. All these subjects receive high school credit. Providence, R. I., has a separate school organized on the same principle. Pupils are selected on the basis of scholarship and prospects, for the special purpose of enabling those who are to continue in school and college to commence Latin and French earlier than the regular grades. Lincoln, Neb., has a preparatory school of much the same type. Pupils are selected for this school from all the sixth A and seventh B classes in the city, those being chosen whose records are the highest and who are physically as well as mentally capable. In this school they complete the seventh, eighth and ninth grades in two years, after which period of time they enter the second year of the regular high school.

Saginaw, Mich., has the departmental plan in the last two grammar grades, which are in separate schools. Charleston, S. C., has one high school of the eighth to twelfth grades, inclusive, while at Fort Worth, Texas, there is a separate school for the last half of the last grammar grade. The function of both these is to familiarize the student with high school methods and certain high school subjects before the regular high school is reached. It is thought that the latter organization would be improved if it were possible to take all the pupils in these schools through the entire seventh year.

LOS ANGELES HIGH SCHOOL COURSES

Los Angeles High School. City High School District

Courses 1 to 6 inclusive are college preparatory, and prepare for the University of California, Stanford, and Eastern Colleges. Course 7 prepares for Mark Hopkins, Pratt Institute, and Chicago Institute of Art. Courses 8 and 9 prepare for Stanford.

1. College of Letters (Classical).
2. College of Social Science.
 - a. Latin four years and Modern Language three years.
 - b. Latin four years and Modern Language two years or English four years.

3. College of Natural Science and Agriculture.
4. College of Commerce.
5. College of Engineering and Chemistry.
6. Architecture.
7. Fine and Applied Arts.
8. Music.
9. General.
10. Elective Course.
11. Normal Courses for Playground Instructors.

Los Angeles Polytechnic High School

1. Commerce.
2. Home Economics.
3. Electrical Engineering.
4. Mineralogy.
5. Surveying.
6. Art.
7. Mechanical Draughting.
8. Architecture.
9. Music.
10. Industrial.
11. Dressmaking and Millinery.
12. Chemistry.
13. Mechanical Engineering.
14. General Elective.
15. College Preparatory.

Gardena Intermediate School and Gardena Agricultural High School

For seventh and eighth grades:

1. General Course.
2. Commercial Course.

For grades nine to twelve:

1. Agricultural Course.
2. Home Economic Course.
3. Literary Course.
4. Science and Mathematics Course.
5. Normal Preparatory.
6. Two-year Agricultural Course.
7. Two-year Commercial Course.

VOCATIONAL ASPECTS

The vocational aspect is receiving much attention, but there seems to be a great divergence of opinion as to what should be the general aim of industrial and domestic arts, and the like, with a corresponding difference in the courses offered. Out of 47 replies, manual and domestic arts are required in 19 cases, elective in 23 cases, and are required for one or two years in 5 cases. Thirteen reply that this course is planned for educative value only, 14 have the vocational guidance motive; and 20 have both these ideas more or less definitely in mind. Two cities—Salt Lake City and Norwalk—mention that they have made provision for vocational guidance under special directors. Lewiston gives credit for outside work, and at the Wisconsin High School one-half credit a year may be earned in "leisure hour pursuits."

Any of the junior courses that have been examined could possibly be grouped under one of the following headings:

- (1) A course consisting largely of the traditional subjects.
- (2) A course consisting of the traditional subjects, and some electives in addition. The electives are language (German and Latin most frequent), manual training or domestic science, and commercial subjects. This is the arrangement in many of the smaller places, and when language is elected forms the course in the larger cities for those pupils intending to enter the college preparatory course in the senior high school. Some require election by the group method, but no statement is made as to direction of choice in a majority.
- (3) A prevocational course, where there is more or less effort to prepare for a trade, but more frequently an attempt to guide the pupil in selecting his life's work, or to prepare for a vocational course in the senior school.
- (4) A vocational course, designed to fit for a trade or to prepare for home making. Here subjects are taught with direct reference to the particular vocation.

FEATURES OF ORGANIZATION

The length of the school day and the length of the class period are other features wherein great variation is shown. The reaction towards the former, however, seems to be in favor of a longer day for both the junior and the senior schools. The length of the recitation period in the junior school varies from twenty-five to forty-two minutes, with quite a percentage having thirty-five or forty minute periods. All but about fifteen per cent report more or less supervised study, exclusive of the general study hall. Seventeen schools have periods of approximately one hour, with a part of the time devoted to the recitation, and the remaining time devoted to study under the direction of the teacher to whom the pupil has just recited. This helps to individualize the work by allowing the teacher to become more acquainted with the pupil's needs, and to learn the pupil better.

On the other hand, a forty-minute period has been found by some to be too long for pupils of this age. Commissioner Wood, of California, states that in his judgment "the course of study in the intermediate school should make adequate provision for study, and especially for periods when the pupil can be taught how to study. The program should be arranged so that the pupil may study a part of the time in the classroom under the direction of the teacher of the subject. Viewed from an educational standpoint, I think it is a mistake to expect too much home study from pupils of the

seventh and eighth grades. Again, I seriously question whether the forty-minute period is not too long for sustained attention in the case of seventh and eighth year pupils. In view of these facts, I suggest the division of the school day into eight 35-minute periods and one 25-minute period." The school day suggested by Mr. Wood runs from nine to half-past three, with a ten-minute recess at the end of the third period, and an hour noon recess.

Classes are of necessity segregated in industrial subjects, but separation other than this or in physiology and gymnasium classes exists only in a very few of these schools. Fresno and Santa Rosa, California, Detroit, and Chanute, Kansas, have classes segregated as to sex; and Richmond, Indiana, has the sexes separated in the study hall. In Clinton, Iowa, the boys and girls in the junior high school are organized into separate classes, and they also assemble in separate assembly rooms. "The purpose of this primarily is for convenience in making the program for the vocational work. There is another purpose in this separation of boys from girls, and that is to give the girls in the eighth grade arithmetic a different class of work which will be better suited to their needs in life; likewise, to the boys, more work along the line of commercial and industrial arithmetic. Besides, so far as we are able to, we expect to give them a different class of reading along the line of extensive reading, which will be selected with reference to their pursuits in life."

Manitowac, Wisconsin, has some classes grouped according to ability shown in a subject, and Evansville, Indiana, has classes grouped as to physiological age. Hackensack, New Jersey, has special classes for girls in physics and chemistry, and as far as possible, pupils who are now preparing for college are grouped in separate classes.

That there are certain advantages in segregation as to sex, especially during early adolescence, will hardly be denied. On the other hand, there are certain disadvantages, of which the chief one is possibly that it has not been feasible to provide two sets of buildings and equipment. With the concentration of larger numbers of pupils in one building and departmental instruction, it would seem that more experiments could be tried in segregation. If advantages are found similar to those already reported from experiments in this field, many of the benefits of segregation could be gained, and the old difficulty of providing additional facilities could be escaped (I, 733).

Reference has already been made to classification as to grade through methods other than promotion. In one or two cases the physiological or psychological age, as indicated

roughly by chronological age, seemed to be the criterion. More experiments are needed in order that the benefits from such a classification may be definitely determined, but it is probably true that too much attention is given to age as measured by years. Crampton (6, 237), in studying the anatomical age together with the chronological age as factors in determining a pupil's general reaction to the curriculum, reached the conclusions that children in the grades who have reached the adolescent age should be given work that will directly prepare them for immediately taking part in active life; that adolescents and pre-adolescents should be kept in separate classes; and that all observations, records and investigations of children should be based fundamentally upon physiological age. Foster (7, 88) found that when boys were grouped in classes according to physiological age they were more efficient. He is of the opinion that the increased efficiency is due to pleasanter associations in mingling with students of the same mental characteristics.

PATRONS, STUDENTS, AND TEACHERS

Superintendents are practically unanimous in asserting that there is added interest on the part of patrons. They are unanimous in saying that teachers and students favor the new plan over the old. Superintendent Johnson, of Rochester, Minnesota, found that out of 205 students 202 gave various reasons for preferring the reorganized school. Superintendent Study, of Neodesha, Kansas, found through the questionnaire method that both students and patrons were strongly in favor of the change.

ACTION OF COLLEGES AND UNIVERSITIES

A question of the syllabus was intended to find whether or not in the opinion of superintendents the institutions of higher learning favored the junior organization. Twenty-eight replies were received, leaving 40 that did not answer. One anticipates some opposition on the part of the colleges; 3 state that the professors of education favor it; 4 reply that as far as they have learned these institutions are favorable; 10 give a direct affirmative; and 10 give answers to the effect that no opinion has been expressed. Furthermore, nearly all of these affirmatives come from four states. From these figures it might be fair to assume that for the most part the colleges and universities, while not opposing the movement, are not coöperating very extensively.

Leland Stanford and the University of California favor the movement, and are recognizing the work done in the junior

colleges in that state. Oklahoma University makes a like provision for work done in the Muskogee school system, which is the only one in that state from which returns were received. The departments of education at Wisconsin and Wyoming Universities maintain a six-year high school. The school officers of the states of California and New Jersey are active in promoting the movement, while the indications are that a number of state departments of public education are preparing to lend encouragement.

The work in the secondary education field of the department of education at the University of Illinois is well known. Moreover, this institution has recently given official recognition to work done in junior colleges. Certain specifications are made with reference to students admitted to the junior college, qualifications of instructors and their teaching schedule, organization of courses, and equipment. In places where these qualifications are "approximately met, substantially hour for hour credit will be given at the time of the student's admission to the University, provided the maximum credit allowed shall not exceed 18 hours per semester." Partial credit will be given if the requirements are partially met. At present three high schools in Illinois, the Crane Technical High School of Chicago, the Lane Technical High School of Chicago, and the Township High School at Joliet, have the first two college years. The principals of these high schools and Superintendent Young have expressed their acceptance and approval of the proposed standards and regulations.

The University of Michigan has officially encouraged the proposition to reorganize the public school course on the six-three-three basis. A committee of the faculty presented a set of resolutions that were adopted by the university and later by the board of regents. The resolutions are as follows:

"1. That school authorities be encouraged to incorporate the seventh and eighth grades of the elementary school as an integral part of the high school system, forming a six-year system.

"2. That school authorities be recommended to organize the six-year high school system into a Junior High School of three years and a Senior High School of three years as soon as local conditions will admit.

"3. That graduates of the six-year high school course be required to gain during the last three years, at least eight of the fifteen units required for admission, two of which units shall be obtained during the senior year.

"4. That graduates of the six-year high school courses be permitted to apply for university credit on examination.

"Resolved, that students entering the University from a junior college, organized as a part of a city school system, may apply for admission on advanced standing, provided the course of study and the faculty meet the approval of the University."

WEAK POINTS

Sufficient time has not elapsed to discover many of the weak points, for some will be found when the system is thoroughly tried out. As it is, features that appear a source of danger to some, are looked upon by others as desirable. The question has been raised as to whether or not the psychological basis underlying departmental work is so thoroughly proved as is sometimes claimed. The difficulties of the elective system have begun to be evident, and there is danger that pupils will begin to specialize at an age when they are not capable of making an intelligent selection. Bagley (2a, 4) thinks it probable that, with the differentiation of curricula beginning with the seventh grade, large numbers of pupils will escape training that ought to be common to all. He is of the opinion that this may lead to social stratification. Judd (10b, 28), on the other hand, does not share this view. Again, all are not convinced that the traditional subjects are not needed, and there is a feeling that a shorter time in the elementary school will mean still less scholarship on the part of high school graduates, which is thought to be of an inferior quality at present (13, 112).

Providing adequate buildings is a hindrance to some, although this feature seems to be of lesser importance and is often worked for an advantage. In more populous centers the establishment of a separate school often means a greater distance for children to go. Parents have sometimes sent their children to the elementary school rather than to a junior school, which was more distant. This tendency may prove a disadvantage in case different types of junior schools are established, for even regular high school students are prone to attend the school that is most convenient.

The six-three-three division has the most points in its favor, but a division ending with the tenth school year presents an advantage not found in a junior or intermediate school embodying grades seven, eight and nine. The course of study for the tenth grade as the beginning of the senior high school would very likely differ from that of the tenth grade as marking the end of a more or less definite cycle of school work, even in those schools where it is hoped that the line of demarcation between the junior and senior schools will be little noticed. On the other hand, a large number of cities are preparing vocational courses that are to end with the ninth school year, and for that large body of students who withdraw from school at the age of sixteen, a course ending with the tenth grade would better meet the needs (14, 133).

Perhaps the problem of greatest importance lies in securing

the right sort of teachers. Higher qualifications will be necessary, with corresponding increases in salary, for it is conceded that the ablest teachers should be placed in this division of the school. A greater percentage of men teachers is desired, and men for the vocational branches are demanded. Teachers qualified to conduct recitations in foreign language through the conversational method are hard to procure. It is undoubtedly true that the quality of instruction now sought is the same that should always have been provided, but added expense on the part of the schools frequently brings more or less objection.

The development of the junior college will also bring the teacher problem, as well as others of its own, the chief of which seems to be that there will be a tendency to offer an additional two years of work similar to the academic course of the high schools. While this will be of value to a certain class, there are the other classes of students that need work that is more vocational in nature which will be more difficult to provide. The indications are that the junior college will be established in places of lesser resources and school population where an inferior quality of work will be done. This, however, the entrance requirements of the colleges and universities will tend to correct.

SUMMARY

1. The junior or intermediate school is in actual operation in 68 school systems. Reports consulted indicate that it is in operation in 19 other school systems; and it has been considered in 18 additional school systems.

2. A large percentage of the cities that have the junior high school have adopted the plan within the last two years.

3. Twenty-three systems are organized with the seventh and eighth grades forming the junior high school, and 27 with the seventh, eighth and ninth. The latter grouping seems to be preferred.

4. Two-thirds of the superintendents require promotion or satisfactory completion of the preceding grade as the entrance requirement to the junior high school. This indicates that little attention is being given to physiological age as a basis for classification of pupils.

5. A comparison of enrolment figures seems to indicate that the junior high school is a factor in increasing attendance. Superintendents are of the opinion that it also reduces the number of repeaters, or failures.

6. Courses that may be loosely termed vocational, pre-vocational, classical, and general, are being prepared for junior or intermediate pupils.

7. There is need for experiments along the line of segregation as to sex and classification as to physiological age. These features, if valuable, could probably be adopted to a large extent in the high schools.

8. Comparatively few of the colleges and universities and state school officials are coöperating in the establishment of junior high schools.

9. At present the weak points of the junior high school seem to be: Narrow specialization on the part of immature students; and lack of the right sort of teachers.

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THE MEDIAEVAL UNIVERSITIES AND SOME OF THEIR LESSONS FOR US¹

By G. STANLEY HALL

Your Eminences, Most Reverend and Right Reverend Bishops, Reverend Fathers, Delegates from Other Universities, Ladies and Gentlemen:

As a fellow-member with you of the Association of American Universities, permit me first of all to express the most hearty "*vivat, crescat, floreat*," which I know all of them feel to the Catholic University of America on this most auspicious completion of the first quarter centenary of its existence, to congratulate you all on its signal achievements in the past, and to express the most earnest hope and prayer that each future generation *in saecula saeculorum* may be marked by a progress of which both you and our country will be no less proud than to-day. As we see war deepening old and arousing new antagonisms in Europe, should we not solemnly resolve that no divergencies of race, belief or interest, however great, shall ever have the power to rupture the bonds of mutual toleration and amity in our own land, and that the eternal peace of God shall be henceforth ever more firmly established among us all?

My theme is "Some Lessons which the Mediaeval Universities Have for Our Own." Only since the epoch-making publication of the Vatican archivist, Denifle, thirty years ago, has it been possible to realize the magnitude of our indebtedness to these institutions which began so humbly and obscurely in the twelfth century, but which grew and multiplied so fast that no less than fifty-five of them were established, thirty-one by popes and twenty-three by Christian princes, more than a century before the discovery of America. In 1553, sixty-one years after the first landfall of Columbus on the shores of the new continent, the University of Mexico was founded with three faculties, eighty-three years before Harvard, so that this, which has been called the last of mediaeval, is also the first of American universities. For decades the best of them had smaller funds and a poorer

¹ An address delivered at the twenty-fifth anniversary of the Catholic University of America, April 15, 1915.

independent housing of their own than the weakest of the five hundred and thirteen accredited universities and colleges in this country to-day. But such was the ardor and enthusiasm of teachers and taught, that if ever there was a university invisible, not made with hands, it was found in each of the three type universities, Bologna, Paris and Oxford, for these were most widely copied.

I. *In general* they were in no sense fiat institutions, made by bulls, edicts or millionaires, but grew inevitably out of the inmost needs of the times. The middle ages had a veritable genius for organizing life and for creating institutions, and it would be hard indeed to name a single general feature of student life, good or bad, a method of teaching or learning, wise or otherwise, an item of organization or control, a theme of rule or statute, or even a form of conferring degrees, of academic festivity or costume, anywhere in the world to-day that did not originate before the close of the fourteenth century. Fondly fostered as they were, first by the church and then by the state, richly endowed as they were with privileges and immunities, so lush was their growth, that all the specifications of their charters and constitutions usually only confirmed an already developed status. The term university, then applied to all corporations, had for a long time no relation to the universality of knowledge, and the aggregations of students in these *studia generalia* were essentially guilds. Altogether they were as characteristic creations of their day as were feudalism, trial by jury, parliament, or a constitutional king. These universities and the immediate products of their work constitute, in the language of Rashdall, "the great achievement of the middle ages."

Their effect upon the progress of Europe, too, was without precedent and probably can never be paralleled again. Theology, scholastic philosophy, law, civil and canon, the dawn of modern science, and the renaissance of the twelfth century, and to some extent that of the fifteenth, are essentially their work. Although the number of students that flocked to the largest of them has been exaggerated, nowhere probably exceeding eight or nine thousand, and although there always were dreamers, dawdlers and sometimes roughs among them, the outburst of intellectual ardor which they represent was on the whole also without precedent. Their vital relations with the church gave to learning an element of consecration it had never known before or since, so that their lessons should be known and laid to heart by all concerned with either the technique or the philosophy of higher education to-day. They are full of all the charm and freshness of the *juventus mundi academici*, they were an academic paradise.

As imperial Rome tottered and fell, Saint Augustine, whom Harnack calls the greatest personal influence between Saint Paul and the sixteenth century, supplied a surrogate to it in his splendid vision of a new spiritual kingdom of God or a theocratic state. So when the four great schools of classical antiquity, that had lasted a thousand years, dwindled and were closed by the edict of Justinian (529 A. D.), the stupendous problem of reorganizing and reconstructing Europe, submerged by wave after wave of barbarian invasion (340-450 A. D. being the century of migration *par excellence*), devolved upon the new religion working through the church and state. Its silent work of organization never ceased, and universities perhaps deserve to be called its chief instrument to that end.

(a) One of its original creations, unknown in antiquity, was a curriculum or a more or less standardized course of study, by which knowledge was both systematized and graded, and thus the seven liberal arts of the *trivium* and *quadrivium*, which held sway for a millennium, were evolved. To create a good course of study requires the very acme of pedagogic sagacity and statesmanship and makes for enormous economies of effort. A curriculum is a *vade mecum* with which to thrud the mazes of knowledges and skills. It seeks to designate in natural sequence the essentials and it saves from by-ways, from wastage of time and effort, and from second-rate sources. It is a trunk line carefully surveyed and facilitated to a maximum of efficiency in attaining a goal. The university only developed higher courses with new material on the basis of the seven muses of Capella.

(b) Again, the very idea of examination was new in the world, and the right to examine and pronounce results was never abandoned, even in those periods and institutions where the professorate was stripped of nearly all its other prerogatives. To measure up the knowledge attained at each stage of progress toward a goal, and also, if more incidentally, to calibrate ability, was not only a new but a splendid stimulus. Although standards changed and there were occasionally traces of venality, on the whole the examination was an ordeal so serious that at certain times and places relatively few attempted it.

(c) The degree was a third new creation. It was like a patent of academic nobility, accessible to all of whatever rank or station who could meet its requirements. It brought distinction, privileges and immunities, and master, and later bachelor, were common name prefixes, like doctor with us. As it was a trait of the Roman law to formally inaugurate into every office, so the conferring of degrees became not only a

very festive but also to the candidate a very expensive as well as elaborate ceremony, in which he was given an open book, a ring, and a hood, while he knelt, and then an embrace, a kiss and a benediction in the name of the Holy Trinity. Only after this was the scholar a full member of the academic guild, and feasting and jubilation followed.

(d) Again, the organization of teachers and learners of different departments into a single institution was another new thing in the world. This made for breadth of view, gave wholesome emulation and interaction, made for comparison and correlation of different branches of knowledge, and brought the organic unity which helps men to feel that the world is not a chaos but a cosmos with a spiritual unity behind it.

Universal and matter-of-course as this quaternian of agencies now is, it first came into existence in the Occident only five or six centuries ago, and constitutes the first specific bequest of mediaeval universities to us. If the institution of this new machinery involved any loss of the spontaneity which marked the culture of classical antiquity, if it has sometimes brought over-conservatism and even retardation, it has more than made up for all this by increasing historic continuity, by diffusing knowledge, by preventing a decline from culture once acquired, by keeping experts together, which latter is one of the best conditions of research, and by invitations to them to make new original additions to the sum of human knowledge.

II. *As to students*, they might enter, as many did, in the early teens, with small attainments save Latin, which was indispensable, and this was tested informally only by the oral questions and answers involved in matriculation. Very few could obtain any degree in less than seven years, and for this the tests were, with occasional exceptions, so severe that many never attempted them, a condition happily reversing our present methods of hard entrance and easy graduation.

At Paris in the fourteenth century most of the daylight hours were occupied by lectures, often two hours long, no small part of which was dictation for all instruction was oral, for students had little access to books but had to make them. There were other stated exercises, including those attending the two stated meals at ten and six, while early evening was a time of freedom and often of trouble. At first students often sat in the straw on the floor, for some thought this made for the humility and docility proper to the *status pupil-aris*, although benches and still later desks came into general use.

As to comforts and hardships, candles and fires were too costly for individual rooms, and there was no glass for windows. From two to four pounds of meat could be bought at Oxford for a penny, and it was possible for a student to live on from seven pence to two shillings per week. Amusements were few, and the statutes called play with bat and ball "insolent" and tennis was "indecent." Chess was forbidden on legible days, and the only athletics were scuffling with each other and perhaps fighting with the people of the town. There were occasional riots and some vice such as Birdseye has shown on the dark side of student life to-day. Penalism or fagging of younger to older students was rife. Discipline, authority, control, which were notably lacking at first, developed apace, so that the occasional floggings of the youthful university students which we read of in the beginning, were soon superseded by fines, but only as the halls developed were students really subjected.

Youth is always gregarious, from the age of the street gang, so like the savage tribe, up, and of this instinct in adolescent years mediaeval universities furnish the world its very best illustration. The students at once organized themselves into nations, under a rector chosen from their own number and given unlimited power, whom they characteristically obeyed as unresistingly as a modern athletic team does its captain or coach, deposing him as summarily if things went wrong. Sheldon has shown the genetic connection between these organizations and the later *Landsmannschaften* and corps, etc., of the German universities, and even fraternities and other student societies of to-day. At the law university of Bologna, where attendants were older, (from eighteen to forty), wealthier and often beneficed or titled, students came to employ their professors on annual tenures prescribing just what puncta of the Pandects they should cover each day, fining them if they shirked a knotty point, binding them by oath not to accept a call to teach elsewhere, forbidding them to leave town without their permission, compelling them to begin and stop on the stroke of the bell, and not to lecture unless there were at least five students, and robbing them of nearly every prerogative save the one to which they clung through many a struggle, that of testing by examinations, and determining whom and how to promote to degrees. This student republic in an age of authority in church and state was thus the diametrical opposite of the unprecedented concentration of power in the hands of the American university president, which reached its acme in the days following the foundations of Cornell, Hopkins, Stanford and Chicago in this democratic land, which was necessary

under such conditions which Cattell and others here now object to, but which is now happily on the wane, deans and head professors now exerting the arbitrary power that presidents did a decade or two ago. But at Bologna, on the whole, at its best, standards of both teaching and learning were probably kept on the highest mediaeval plane. Throughout the entire pre-Reformation period the church stood for academic freedom, and in many a contest, culminating in the long struggles between the University of Paris and the Chancellor of Notre Dame, Rome decided against its own local dignitaries in favor of university independence and autonomy, and in a great majority of the many appeals made to her she sided with the professorate, and even with the students, against counter-appeals from both spiritual and temporal authorities.

For centuries a favorite method of government was by exacting oaths. All were sworn to obey every old and every new statute, to attend lectures, be punctual, pay debts, not cheat or bribe at examinations, and instead of the roll-call at each lecture, students had to swear at the beginning that they would and at the end that they had attended. In some cases there were over forty distinct oaths. Such was the horror of perjury and its penalties that this was long effective, but as oaths continued to multiply it was impossible either to keep them or to learn by elaborate espionage whether they had been broken. If our honor system has historic roots they are here, and at any rate this historic chapter has both its lessons and its warnings for us. Slowly fines came to take the place of oaths as more effective.

We have the beginnings of university extension in the early and common difference between ordinary and extraordinary instructors, hours, topics and books. Doctors and masters taught in the morning hours, in academic rooms, where there were any, the standard topics, and used the most classic texts, while the probationary teaching of intending masters and bachelors and all the work of *repetiteurs*, drill-masters and cursory readings took the second place, and a system of assistants and apprentices, to whom the professors delegated more and more of their work, grew, and all such courses were often given outside academic walls. It was these men at the larger that constituted the waiting list for appointments in the smaller universities. Some of them taught on for many years with no higher degree, so that we have here also the beginning of the docent system, which has lately become such a burning problem in German institutions, in many of which they have outnumbered the full professors, sometimes almost

revolutionizing old statutes and precedents in quest of their rights.

Academic vestments, too, can be traced back with considerable continuity to the original cappa, toga and baretta, of the fourteenth century, where these were mentioned in many a regulation, and were absent at first but came to be required of all. They were of course of ecclesiastical origin. Students were commanded to avoid gaudy lay dress, such as pointed shoes, trunk hose, bright colors, ornaments, also daggers and firearms. The pleat down the back of the standard academic hood to-day was once a veritable hood to be drawn over the head, while the rudimentary pocket in it is what is left of the pouch in which the mediaeval student carried his breakfast or lunch. The costume meant both distinction and immunity.

The induction of new students by older ones, by weird and often cruel rites, Specht traces back to student customs of classical antiquity, but they have perhaps never been so elaborate or rubricized as in the middle ages. The newcomer was bullied, hoaxed, badgered, hazed, robbed, mulcted, without stint. He was a tenderfoot, fledgling or beganus, a wild beast with horns that had to be sawed off, as his ears must be symbolically clipped. He was washed, barbered, fumigated, forced to confess preposterous crimes, and sometimes ceremonially buried and resurrected. In the Italian universities the freshman was more often a criminal, who was arrested, tried, condemned, sentenced, punished, and sometimes executed, while in the whole system of penalism he was subjected to all the whims and abuses of an older student. Always, however, having finished his purgation, his hardships and his servility end, and he is welcomed with great rejoicing into complete membership in the confraternity, and if the insults and outrages he has suffered rankle in his memory, he can find sweet recompense in inflicting all these indignities on younger men. If we compare all this with Sheldon's compilation of student customs in this day and land, we shall be struck with the ultra-conservatism and the utter lack of originality on the part of modern students in this field. These inductions into studentship show a very close parallel to the ceremonies with which nearly all savage tribes induct their pubescent youth into manhood and membership of the tribe. Indeed, these ceremonies touch one of the profoundest themes in psychology, which has countless outcrops in the ancient cults of Dionysius, Apollo, Attis, Osiris, and a score more. The modulus of every romance and drama is to subject the hero to a series of severe trials that tax his energy to the

utmost, almost to the breaking point, and then in the end to bring triumphant success, pleasure and relaxation of effort. By thus cadencing the soul and regulating alternations between pleasure and pain, the sovereign masters, we sanify, normalize, give elasticity, power of rebound, to life. The utmost strain, effort, danger, is succeeded by the greatest relief and perhaps ecstatic happiness. Now all this goes back to the death of nature in the fall and its resurrection in the spring. From these old winter-spring festivals up to the passion history, which is the world's masterpiece, man has been striving to safeguard his own nature, to spur the rising generation upward on the "excelsior" path of escape from the depressing sense of inferiority, and to make the very most and best of himself. These great rhythms give the soul an immunity-bath against the two chief dangers which modern psychiatry shows beset its sanity, viz.: being overwhelmed by pain or else inebriated with joy. These alternations not only give the soul unity against all forms of dual personality, but serve as the Aristotelian katharsis, for they make for elasticity, impel to both effort and control, and best of all, they sublimate and safeguard from passion and unfold the higher powers of man. Thus there is a sense in which the whole secret of education consists in administering aright these great rhythms, for education began with public rites, which always followed the formula pain-joy, and has spread up and down the age scale as civilization advanced. Thus we have a point of vital contact between religion and the higher culture.

The earliest form of spontaneous public benefaction to universities was not gifts to faculties or administration but to students. In the fourteenth, and occasionally in the thirteenth century, pious donors began to establish small funds for poor but deserving students. Some specified that the beneficiary should come from his own family, province, town, or have prepared at a specified school, or in some way give proof of ability, intend to enter clerical or some other profession. Some of these funds were very small and provided only lodgings, clothing, free beds in hospitals, books, firewood, and occasionally free meals, and along with these came the larger gifts for halls in which students first could, and then must, live. These foundations, *bursae*, stipends, are often pathetic illustrations of public sympathy with able young men who are indeed the light and hope of the world, most of all worthy of devotion and service by their elders. In this youth of our modern world, young men who sought the pearl of academic wisdom appealed profoundly to the instincts of the higher parenthood of their age. Baumgart fills a large volume with these ancient and often quaint provisions for facilitating stu-

dents in Germany. Leipzig, for instance, has to-day nearly 400 distinct funds, the oldest established in 1325, and all together providing for 729 students. The Oxford colleges have 367 of them, besides 480 scholarships, and 129 exhibitions. They abounded in France till the legislation of Turgot swept them all away in order that the state might appropriate special funds to such students and thus gather to itself their gratitude, while in Great Britain the principle of *cy-pres* has been so applied as to relieve many of these funds from the often absurd conditions of the dead hand. In this country I make 270 paying graduate fellowships, disregarding those purely collegiate.

Thus in Europe to-day many a student career is made possible by gifts of those who four or five centuries ago believed with the Parliamentary Commission who, at the close of their investigation of many thousand ancient bequests in Great Britain, declared in substance that charities devoted to this purpose probably had done church, state, and the world in general on the whole greater good than any other form of benefaction.

The emperors of ancient Rome gave special privileges to teachers and scholars, and in 1158 the first of those in the middle ages was granted by Frederick Barbarossa, exempting from attacks or extortion all students going to or returning home from the university, on pain of a brand of infamy and fourfold restitution. In 1200, as the result of a tavern brawl between town and gown, the Provost of Paris was commanded by the King to swear loyalty to students, and they were given a charter of exemption from civil court jurisdiction and supplied with a court of their own. In the same year all chattels of students were exempt from seizure by the civil power, for whatever cause. Students must not be interfered with on any pretext, and every plaintiff against them must appear before the university court, and even church courts could not try students save in the university town. Then came exemption from taxes, not only of all academic property but usually from all taxes whatever, either by masters or students or even subordinate officials. In 1231 Pope Gregory IX conferred one of the choicest of university privileges, viz., that of suspending lectures. This involved not only sealing up the fountains of wisdom but often a still more dreaded withdrawal of the university to another city, as indeed often occurred. The King of England in 1229 invited the University of Paris, when it happened to be in revolt, to migrate to his country, but the very threat of secession usually brought town authorities to terms and often to their knees. Another choice privilege granted to the masters and scholars was the *jus ubique legendi*

first granted by the papal bull in 1292, a privilege persistently sought by and often extended to other larger universities. This authorized the holder to teach without further tests in any university in the world. Cities also sometimes lavished universities within their bounds with privileges. They paid professors' salaries, exempted them from all kinds of rates and from all civic duties, appointed money lenders for students at about a fourth of the usual interest.

III. *As to work and studies* (a) the oldest mediaeval university, dating back to the tenth and possibly the ninth century, at the yet older health resort of Salerno, was devoted entirely to medicine, as Montpellier was in large part later. Here we find many of the germs of science, and its original ideal was expressed in the sentence of Hippocrates, "God-like is the physician who is also a natural philosopher." To a basis of ancient empirical tradition and practice, Hippocrates and Galen added their epitomes of the therapeutic experience of classical antiquity, and third and later there came from Saracen and Jewish sources the mystic elements of astrology, the parent of astronomy, and alchemy, the parent of chemistry, along with many new remedies, all of which Sprengel's monumental work has used to make the story of the dawn of medicine a fascinating chapter in culture history. Logic and mathematics were propaedeutics, and much dialectic energy was devoted to giving the medical canon systematic form. After a long struggle with the popular horror of mutilating the human cadaver, not unlike that now against controlled vivisection, the dissection of one male corpse, fresh from the hangman, often in the churchyard, was permitted once a year. As first-hand knowledge of the body increased with growing liberality in the anatomy acts, the old texts were found not infallible, and when in 1482 laymen and even women students could finish the six years' medical course and receive degrees, and a little later Vesalius and then Harvey made an end of the old methodism, humoralism, iatrim, etc., the foundations of modern medicine were laid. Of course the texts and the knowledge of that day are long since transcended, but these pioneer medical schools were from the start far in advance of anything the Orient ever knew. At every period they represented the best medical thought and knowledge that then existed in the world, and what is better yet, they supplied the impulses that have issued in the best we have to-day. Their errors and even superstitions involved a profound and wholesome sense of man's inner union with nature. It was their work that made the great Vienna surgeon, Billroth, plead for a required course in the history of medicine in every institu-

tion for the training of the modern physician, and such a text Hesel sought to supply. Not only medicine but biological science owes to this type of mediaeval university a far greater debt than it has yet realized.

(b) The chief secular problem of the middle ages was to reorganize business, government and society. We seek only to improve to-day what they created almost *de novo*. Their chief instrument to this end, as Savigny has best shown us, was Roman law. Deeds and contracts, courts and judicial procedure, inheritance and succession, corporations and charters, the status and rights of the various social classes, the kinds and functions of officials, taxation, crime—all had to be provided for. Besides the codex of Justinian in twelve books, which was at first all that was known, there came a little later the fifty books of the Pandects, digesting the results of fourteen centuries of legal experience, unknown till Irnerius introduced them at Bologna in the twelfth century, and thus created anew for the modern world the profession of law, which henceforth was taught, not as a branch of rhetoric as before, but as a vocation requiring long and special study by itself. Henceforth we are told "law was the leading faculty in by far the greatest number of mediaeval universities for more than five centuries." The practical effect of this upon European history and the progress of civilization is incalculable. The law universities recurriculized the law more efficiently than had been done in the *Institutes* or other ancient text-books, and nothing was more congenial to the unique instinct for organization of the mediaeval mind than this written reason or Organon of economic and sociological statecraft. More systematic and comprehensive than many codifications of modern laws, it is still taught beside them in most European countries. We even find here traces of the case system. Even the constitution and statutes of the mediaeval, and in many respects those of the modern, French and English university are based on Roman law.

(c) The very year of Abelard's death, 1142, Gratian, inspired by the impulse of the Roman civil law jurisprudence, published another of the great text-books which "took the world by storm," and which became the solid basis of the great superstructure of canon law. The church had already a vast body of decrees, edicts, statutes, decisions of councils and officials, modes of ecclesiastical government, internal and external, laying down the relations between spiritual and temporal authority, comparing Christian and classical culture, specifying the requirements and training for different officials. As Augustine's lofty vision of the city of God had become ever more concrete and real, its administration became no

less intricate than that of the state, and hence before this time there had been various unsuccessful efforts to correlate the rules and precedents of religious institutions into a systematic whole. But the *Decretum* at once made canon law also a department by itself, more or less independent of theology, of which it had before been a part, and also distinct from civil law. Thus a new class of students and a new doctorate came into existence. The scope of this new course of study was extremely comprehensive and the method, borrowed from Abelard, was to present both sides in turn of all questions. It is no wonder therefore that this new department shaped and is the key for the understanding of church history, not only in those centuries, when it was no less normative of the destinies of Europe than was civil polity, but in our own age.

(d) Finally, how can a veteran, though humble, teacher of philosophy with this theme avoid even in this imposing and competent presence a word touching the most original of all the intellectual creations of the mediaeval world, the scholastic philosophy, the product of four centuries of earnest, acute thinking, by as pure, devout and learned men as have ever striven to explain the universe, a system so praised on the one hand and so disparaged on the other, that the attitude of every historian of philosophy toward it has long been almost a shibboleth of his creed? Happily of late there is here some *rapprochement* on both sides of the great divide. On the one hand it is seen that scholasticism is not a saurian of an extinct species, but a masterly solution of many of those supreme problems of life and mind that always have and always will both challenge and baffle the great intellects which struggle to know what God and man and nature really are, while on the other side it is seen that later thinkers and their systems are given abundant recognition. No philosophy ever undertook so earnestly the stupendous work of harmonizing faith and reason, of unifying the classic culture with the Christian consciousness.

To this end the happiest possible method had been given by Abelard half a century before the first university was founded, in the fifty-eight theses and antitheses of his "*Sic et Non*," in which each of the opposite views, often in extreme form, with a place for even an *advocatus diaboli*, and with copious citations, is alternately presented. By this contraposition of authorities the student is stimulated to his uttermost to find out the way of truth. This became a method of such pedagogic effectiveness that it was followed in Gratian's *Decretum*, and in the *Sentences* of Peter Lombard, and became the method of orientation in civil law and for sometime even in medicine and science. Thus came in the fashion of debate, controversy,

discussion, and it is the precise method of Abelard which the University of Wisconsin has lately followed in its half dozen extension leaflets on as many themes, outlining both sides of each question, with authorities, for the guidance of the debates it has instigated all over the state. Thus disputations became almost universal. Every student must propound a thesis as a kind of knightly challenge and be ready to maintain it against all objectors. We still find rudiments of this method in almost every European thesis and promotion, while in this country debate, since it spread so rapidly through most of our colleges about 1850 and has now taken on intercollegiate features, is again finding just recognition. In this way humble third member of the *trivium*, logic, came to a commanding position, and this intellectual ju-jitsu method of attack and defence brought the youthful mind to its very best edge and temper. In its higher aspect it was this method by which the ship of thought was steered between dangerous extremes, trimmed and kept on its true course. Controversy (to change the figure) was the pioneer that opened up the highway of truth.

Since the hebemic art of Socrates brought forth concepts, which Plato developed into his ideas, and Aristotle made into categories, they have been the focal theme of all philosophy. Now they have been thought innate in the soul, now moduli in the divine mind after which the world was made, now obtained by induction like the various steps of Porphyry's ladder from the *infima species* the fixity of which Darwin opposed up to the *summa genera*. They even underlie our problems of "imageless thought" and "determining tendency." Kant assumed an even dozen of them, and Hegel sought to organize them into what he thought to be the ipsissimal nature of God. Thus they have been the key to most of the great problems of the ages. Now as Plato strove to make them a new and ineluctable basis of the state when convictions had crumbled under the disintegrating influence of the Sophists, so the scholastics had to turn to them for the basis of the new spiritual kingdom of man's soul. Thus whether universals were before, after or in things was vital to the very existence of higher ideal culture and of ecclesiastical organization and theological truth. If extreme nominalism be true, there is nothing in the world but isolated particulars, as unrelated to each other as the Lucretian atoms. mind plays little part in knowledge, and every type of idealism is a play of empty words. Empiricism is the only philosophy, and sensationalism all there is to psychology.

On the other hand, if extreme realism be true, ideas are all that is really real, the principle of individuation fades, and things if not persons tend to merge into an ever more generic,

if not pantheistic, background. Between these disastrous extremes a broad and safe middle highway must be opened, and justice done alike to the partial truth of both views. This was precisely the problem of Kant, as it also is of Bergson and Eucken and our contemporary realists, with only minor differences of terminology and connotation. It would be only too trite to show in detail how Occam anticipated Locke in his polemic against needless ideas, how Anselm in his famous argument for God was followed by Descartes, and in his *credo quia absurdum* by Jacobi, who found a light in his heart which went out when he tried to take it into his intellect, or how Albertus Magnus did much of the very work of Trendelenburg six centuries earlier than he, how Bonaventura anticipated Schelling's intellectual intuition, and Fichte's blessed life, etc. But such comparisons, which are endless, belong elsewhere.

The great point is that the scholastic thinkers were pragmatists. Their thinking for the most and best part at least was not aimless speculation or romancing with ideas, nor motivated by the lust of evolving individual systems, but it was practical and all to the end of conserving and advancing institutions and ideal worths which they felt to be so inestimably precious that they transcended every personal or merely cultural end. Theirs was far more the work of the practical than of the pure or theoretic reason. Scholasticism tested thus by a new pragmatic sanction meets it supremely well. It did conserve the countless idealisms of cult and faith, and it made the old and the new intussuscept. It also transmitted to later centuries most of the great problems that have never ceased to be the center of philosophical thought. When we have a real and truly genetic history of philosophy, which is still lacking, in which all the even subconscious reverberations of the great schism are transcended, only then shall we realize the inestimable debt that modern owes to mediaeval thinking in these fields. Shall we think the worse of Plato if we agree with Zeller that his thinking was motivated throughout by the desire of saving the state and all that it meant, or of Fichte if his supreme aim was the patriotic one of making his dear fatherland the ego of nations, or of Hegel if we agree with those who regard his system as primarily devised to give a deeper cultural basis to Prussian bureaucracy?

Thus, to conclude, while printing and the multiplication of books and the growth of modern literature and especially of science, have vastly changed the method and the subject matter of academic culture and have brought transforming new views of the universe, theology, classics and philosophy have changed far less in either method or subject matter. Here we still

have much of the same authority of great texts bespun and sometimes swamped with glosses and notes, of lecturing that approximates dictation, and grammar which still remains, though dictionaries have come. Even in the domain of science, the mediaeval Latin of the schools has given us an enormous wealth of technical nomenclature. On the side of organization, university statutes and their administration, especially in Europe, are still more on the basis of Roman than of modern law. Faculty experts in rules and precedents illustrated the "case system" long before its modern use. While appropriations and endowments have vastly increased and brought with them centralization of control, student life has, until the recent athletic movement, added almost nothing not found in the early days of reaction from the strictness of cloistral rule, if indeed it has not lost much of its pristine freshness and romance. As to the relation of studies to life and to the social, political and religious institutions of their time, no university of our own day has been more practical than their mediaeval forerunners. The ideals of academic youth are often said to be the best material for prophecy or the best embodiment of the *Zeitgeist*, and we are often told that as Oxford inclines so England will go a generation later; and so as these mediaeval universities led, Europe followed. There is always a sense in which a university does not consist of buildings, endowments or numbers of students, but is a state of mind. It is found wherever a great teacher and a few gifted pupils are gathered together. In all these respects the more we know of the mediaeval universities the more we shall see that we owe them.

MEASURING THE END-PRODUCT

By JEAN DAWSON, Normal Training School, Cleveland, Ohio

Can you tell a cherry tree from an apple tree when it is not in fruit? Do you know wheat from oats, peas from beans, a cabbage from a turnip, a rose from a blackberry bush, an oak from a maple, a burdock from a dandelion?

Ninety-seven graduates from ten high schools in one of our large cities were asked to identify these and other common plants and trees growing within a few rods of the Normal Training School which they had just entered to prepare themselves for the teaching profession. The test was conducted in the laboratory. Each specimen bore its own number and each student examined it at her leisure. In every case the specimens were typical. Branches, eighteen inches or more in length were cut from the trees and berry bushes; entire plants, potted or pulled up by the roots were used. No scientific names were required; if a student called a *quercus alba* an oak, she was given credit for a correct answer.

High school graduates fail to recognize the most common things in their environment

The result of the test was a surprise. It is clear that children passing through the public schools acquire very little knowledge of the common things of nature. It was thought that, being city-bred, the girls would know more about city things. Accordingly they were asked to locate accurately ten buildings of the city. The buildings chosen are in the central district and are important from a civic or a commercial standpoint. No answer was counted unless the girl had been born in the city or had lived there at least five years. Although ninety-five of the girls were born in the city and had spent their lives there, twenty-nine per cent could not locate a single one of the ten buildings, and twenty-four per cent could locate but one.

Thinking that the class might be exceptional, a similar test was given to one hundred girls entering the same school the following fall—1913. The results of the tests were tabulated and are given together for comparison:

	Percentage that did not know	
	1912	1913
¹ Vegetables:		
Squash vine	52	72
Cucumber.	61	48
Corn plant	7	7
Carrot.	91	18
Parsnips.	35	67
Red beet	4	5
Kahl-rabi.	75	78
Curled-kale.	92	92
Egg-plant.	96	91
Celery.	8	21
Tomato.	22	16
Lettuce.	15	6
Wax-bean.	20	28
Cabbage.	12	7
Radish.	67	3
Potato.	44	30
Lettuce in seed.....	75	30
Corn in blossom.....	2	31
Fruit Twigs:		
Apple twig	45	52
Plum twig	73	93
Pear twig	25	91
Peach twig	11	44
Cherry twig	35	97
Wild Apple twig	72	91
Mountain Ash twig.....	90	99
American Elm twig.....	97	76
Locust twig	63	67
White Oak twig.....	18	42
Sugar Maple twig.....	6	13
Wild Rose twig.....	40	89
Blackberry twig	62	86
Raspberry twig	73	77
Plants:		
Chrysanthemum.	53	72
Begonia.	71	41
Cactus.	20	23
Fern.	2	3
Geranium.	3	6
Ivy (English)	35	57
Grains in head:		
Wheat.	79	68
Oats.	15	30
Rye.	84	79
Barley.	79	82

¹ The class of 1912 was given the test two and a half weeks after it entered the Normal School and had its attention called to these plants, while the class of 1913 took the entering week. The advantage of this time probably accounts for the difference in the standing of the two classes. About one-third of each class had had botany in the high school.

Grains Threshed:

Oats.	18	41
Corn.	0	15
Wheat.	43	56
Beans.	4	13

Weeds:

Dandelion.	10	12
Plantain.	69	57
Dog's-fennel.	85	98
Wild aster	85	94
Burdock.	79	95
Lamb's quarters	69	100
Wild lettuce	58	99
Sand bur	68	96
Sweet clover	53	97
Worm-seed.	100	100
Curled dock	93	94
Ragweed.	92	91
Red clover	4	10

Percentage failed
1912 1913

Buildings:

City Hall	86	83
W. Building	64	78
Chamber of Commerce.	79	84
Principal Savings Bank	88	88
Old Court House.	70	73
Old Post-office	89	94
New Post-office	65	83
Principal Hotel	87	83
New Court House.	85	75
R. Building	84	95

Looking with unseeing eyes

To adjudge these girls dull would be libelous to the system of grading students in our schools, for be it understood that to enter the normal school, an examination must be passed after graduation from a four-year high school course, or the student must have attained an average standing of eighty-five per cent in all high school subjects.

To attempt to excuse these young women's lack of knowledge on the ground that the objects in question were not familiar to them, would be unfounded. To be sure, in the large city in question, there are congested sections where trees are scarce and gardens few: and unfortunately there are schools located in such districts. Actual facts show, however, that only about two per cent of the students examined came from such districts, the city being noted for its school and home gardens, beautiful boulevards and natural forest parks. The aforesaid buildings too are familiar sights, as all street cars run to the center of the city, and these buildings are constantly referred to in the newspapers.

Feeble powers of discrimination

Upon every page of themes, written by these girls, the confession was made that they have been looking with unobserving eyes. Indeed their power of discrimination is so feeble that they find it difficult to distinguish a potato from a tomato vine, a willow leaf from a peach leaf, and an ash from a hickory. One girl confesses that she can tell the fruit trees only when the fruit is upon them. Twenty-nine per cent of the class of 1913 called a blackberry bush a rose bush. An entire class failed to recognize a mountain ash without its clusters of fruit after they had studied one with fruit for some time. Seeing the Waahoo or Burning Bush with its red fruit, they could not recognize a bush when the berries were green. Ninety-five and nine-tenths of the young women recognized the red beet, but only nineteen and six-tenths of them were sure that a beet was a beet when its color was white. One girl was very much distressed when told that she must familiarize herself with the common vegetables. She said that she had no garden at home and declared that she could not remember having seen one the entire summer. Had this young woman turned her head slightly, so as to have glanced out of the laboratory window, she could have seen, not over a rod away, a vegetable garden which she had passed five or six times daily for three weeks!

As poorly as they discriminate with their eyes, they make less use of their senses of taste, touch and smell. No member of the class was seen to taste or feel of a specimen and only about two per cent of the class made use of the sense of smell. Four out of six college graduates, who took the test, and twenty-one per cent of the high school graduates failed to recognize a fine celery plant, either by sight or by its characteristic odor. All of these young ladies, however, confessed to eating celery and had even bought it in the market.

Lack of knowledge due to lack of interest

In the themes which they wrote upon their study of trees, these young women again and again attribute their ignorance of their environment to a lack of interest. A few of them could remember being interested in trees and plants and losing their interest because of being rebuffed and ignored by their elders; most of them had never before had their interest aroused. Perhaps this is but natural, as few of us are interested in closed books. Let us listen to what some of the girls say on these points. Many of them speak of a growing interest and have given their themes such titles as "An Awakened Interest" and "An Awakening."

"I often used to ask about flowers and trees that I came across but as no one could tell me, I let the matter drop."

"I would often ask some older person the names of plants or flowers and the general answer would be, 'Don't bother,' or 'I don't know.' That would settle it, for if they did not know or care, what did it matter to me? Now for almost a month I have studied trees, weeds and vegetables, and I have had a great awakening."

"I have lived in the country the greater part of my life, but I have really paid but little attention to nature. People have asked me, and I have asked others the names of different plants, trees and vegetables, but that was as far as it went. Sometimes they knew and sometimes they didn't."

"It seems to me that a new world has suddenly opened before me. I have been asleep or rather I have gone through life with my eyes closed. I have become so enthusiastic in my tree study that my folks have begun to study them also."

"I used to look at trees, vegetables and other plants with unseeing eyes. Until September 1912, the only tree I knew was the maple. The fact is, I never thought about the different kind of trees: they were merely a part of nature that I encountered every day of my life."

The following is quoted from a student who comes to the Normal School with a record for scholarship, leaving the high school with an average of over ninety-one per cent and having spent one successful year in college.

"Three weeks of science has made me very inquisitive. I have spent many summers in the country. Often I have asked what the different things were in the woods and could not find out. If someone did tell me the name of a tree, the chances were that I would know it again by its location alone: the same kind of a tree, I would fail to recognize if met in another place. This is because I did not have its distinguishing characteristics in mind and could not compare it with other trees. Now that I am learning to observe every little thing, I can go out into the woods and feel at home with all of the trees, for I am acquainted with them and they are no longer strangers."

Although this young lady has spent many summers on a farm, where all the specimens upon which she was examined grew in abundance, her average was no higher in the test than that of the other members of the class. She did not know an elm, apple or plum tree. She did not recognize a raspberry or a blackberry bush, a melon or a cucumber vine; could not tell a carrot, a parsnip or a potato plant, although she says that she at one time picked up five bushels of potatoes in the field. She knew oats only in the head; could not recognize wheat, either in the head or after it was thrashed.

The class of 1913 were given an additional test on things usually of interest to girls. They were required to identify the names of the women editors of the woman's magazine page of the two evening papers of the city, and they were asked to locate the principal theaters and the shops dealing in women's apparel. Only two and a half per cent failed to

recognize the writers for the women's page in the daily papers and nearly all of them gave the impression that they could go to the shops and theaters; but, strange to say, only eight per cent of them located the shops and fourteen per cent the theaters, so that a stranger could find them without difficulty.

Fail in concise thinking and accuracy of expression

In locating buildings, truly the juggling of real-estate would have paralyzed the business world! Many of the buildings were given no definite location on streets that were miles in length; when the intersecting streets upon which a building faced were given, it was not assigned to one of the four possible corners. Careless, slipshod thinking was greatly in evidence and was even more distressing than their lack of discrimination and their failure to know beans, corn and cabbage. It sets one to wondering whether the fault lies in the home, the school or the child. In the case of these young women, what happened that the mathematics which they studied during their high school course did not teach them the concise thinking and accuracy of expression that has been claimed for it for centuries?

Conscious that there is something wrong with the school curriculum, why do we go on blindly experimenting when we might learn the cause of the trouble beyond the question of a doubt? Why not, as in the business world, apply the measuring rod to the end-product of our school (the high school graduate) and remodel our school course according to the results found?

NURSERY AND SAVAGERY

By ELSIE CLEWS PARSONS, New York City

On a closer acquaintance with savage society nothing perhaps surprises one so much as its utter conventionality. The "wild" savage is a fiction, the "natural man" as artificial as other eighteenth century concepts. Savage life is formal and set; more restricted than life anywhere in civilization—except in the nursery. In both nursery and savagery, restrictions, too, taboos, depend on the force of habit. Right and wrong become synonymous with habitual and non-habitual. Innovations are suspected, perplexing, distressing, unbecoming, bad.

In both kinds of community the avowed source of authority is much the same. "Why do you do this or think that?" you ask savage or child. "Because our fathers bade us or told us," answers the savage. "Because Mother said so," answers the child, remembering perhaps that to his "Why?" Mother has often rejoined, "Because I say so."

In enforcing traditions or rules the ancestral spirits and Mother are at hand to punish or snub originality, but there is a kind of automatic sanction which is also in vogue. Take food taboos, the food taboos, for example, of Australia. If a North Queensland girl eats anything living in salt water, a snake, it is said, will kill her. Meteorites also kill the boys and girls of Queensland who eat forbidden food. In Victoria, they are struck by lightning. If the boys of New South Wales eat the flesh or eggs of emu they will break out in sores. The boys of the lower Murray tribes believe that if they ate emu, wild duck, swans, geese or black duck, or the eggs of these birds, their muscles would shrink and their hair become prematurely gray. If Arunta boys or girls eat parrots or cockatoos, they will get a hollow on the top of their head and a hole in their chin. The breasts of girls eating kangaroo will not develop nor the beard or whiskers of boys eating quail or its eggs. Among the Wakelbura the spirit of forbidden game is thought to enter into its youthful eater, first causing him to utter the peculiar cry and then killing him. We hear of a Kurnai boy, who, having eaten forbidden opossum, was told that he would never grow up to be a man. He did, in fact, lie down under the belief and within three weeks he was dead. Among many other savages, outside of Australia, forbidden food at any age causes skin disease, shriveling up of the body, decay, baldness, death.

What are the supernatural effects of forbidden food in our nursery? Who does not remember having once been told: "If you eat so much candy, it will make you sick," or "it will give you pimples," or "you will never grow up to be strong," or "you won't be a man before your mother?" Or "if you drink so much water, you will turn into a brook," or "so much milk, you will begin to moo?" Or, again, "if you eat oatmeal, it will make your hair curly," or, "if you drink milk or eat the crusts it will make your cheeks pink?" "You don't need so much cake or sugar, you are sweet enough," says

Grandma. And doesn't Nurse keep her charges from swallowing seeds or pits by telling them that vines or fruit trees will grow out of their stomachs?

Like savages, too, children have their own ritualistic food. I suspect that cake, candy, and ice cream, lemonade, tea, and coffee all mean something to them besides a pleasant taste. Wine certainly does. To drink it means that they have passed from one age class to another—whether or not they promise Father not to touch it until they are twenty-one.

In such a pledge smoking is apt to be included. But, with or without the extorting of a pledge in mind, doesn't every parent feel called upon to tell a son—if not yet a daughter—that if he smokes before he is twenty-one he will not grow up to be a strong man? Under like circumstances New Guinea youths are told that their hair will not grow.

Big boys are sometimes accused of taking their first cigarette or their first whiskey and soda because it is a grown up thing to do, but what little boy isn't charged from time to time of wanting to "feel big,"—a strangely grave offense? And are not all children being constantly told that they can't do this or that until they are older? Or that such and such privilege is allowed to so and so because he is older?—an argument the senior is always quick to turn to advantage too for himself. "I know better than you because I am older," parent and elder brethren assert. The argument that "only babies do that," is inhibitory again and again. "Don't cry like a baby," is a common appeal; "you are worse than a baby," a common taunt. A little boy is promised a horse or a gun when he is "big." A growing girl is told that she is too old to play any longer with dolls. "When I became a man, I put away childish things"—because I had to, Paul might have added.

Savages are also very strict about their age classes, always recognizing the prerogatives of seniority and limiting many things besides food and drink to certain ages. A Kikúyu woman of East Africa does not wear copper ear rings until her first-born is initiated into the tribe. Only after initiation could a Queensland youth wear a grass necklace, the human-hair belt, and the opossum string phallockrypt of a man. A Wemba of Rhodesia "speaks his case" only after he is a father. In the Soudanese democracy of Wadai as in many another tribal government young men have little influence and seldom speak in council. In East Central Africa a girl believes that if she does not marry at nubility she will die. Contrariwise, it is as dangerous for an Australian youth who is being "made into a man" to touch or even look at a woman as to eat forbidden food.

Both child and savage are conventional about dress, occupation, and sex in connections other than age. A boy's collars and neckties must be just like those of the other boys—otherwise "they will laugh at you." "Not a single girl I know wears this kind of a dress," is affirmed as an unanswerable argument against it. Neither has a savage any choice in what he puts on. His feathers, beads, and furs are strictly regulated, both in form and material. His ears or nose or lips have to be pierced for ornaments, his skin scarred or tattooed, his skull or features molded after set patterns. With us tattoo is limited to sailors and, it is said, instinctive criminals; *bona fide* earrings are out of fashion. (I am told, by the way, that even the D. K. E. fraternity has given up its initiatory practice of scarification.) But in one particular of personal decoration our children may still remind us of the savage—in haircut or in head-dress. We all know how scrupulous modern man is about his hat, and some of

us find out to our cost that his anxiety about it begins in boyhood—if not babyhood. In the same way solicitude about a girl's hair ribbons antedates that which she feels later about her *coiffe*,—"rats," puffs and switches. As for the hair itself, few mothers are brutal enough to keep a girl's hair short or a boy's long—so great is the emotional cost to all concerned. The hair cut of the savage is just as conventional. Sometimes widows are not allowed to re-marry until their shorn locks grow long again, and a hair-cut or the lack of it is a favorite tribute to the dead. Often it betokens allegiance to deity.

Professional and industrial boundaries are even more impassable for the savage than for the modern wage or salary earner. The medicine-man must serve either a prolonged apprenticeship or go through trying ordeals or inherit his professional secrets. An up-start runs the gravest of risks; for it is far more dangerous to be heterodox in savagery than in civilization. And the savage priest monopolizes his god far more effectually than the civilized. He himself tends to be more and more monopolized by his profession. Finally as a king-god he is an utter specialist, and can never mix with the crowd again. The early mechanic is also a specialist. The smith, for example, must work under set conditions, nor can he change his quasi-sacred job. Moreover it is hereditary. War as well as religion introduces caste into savagery, for warriors and slaves, their captives, tend to be specialists.

Our children have also a sense of caste. Interchange of function in the household they greatly resent. Self-assertive governess or nurse or maid is sure to be met with, "You are not the boss," or "Mother is the only one who can punish me," or "I'll tell Father on you." If let, children keep home and school interests as separate as possible. Moreover "My teacher says so" is unanswerable argument against home views on spelling or arithmetic. It is an unusual child who questions why a "workingman" should be one, or why some people travel in street cars and others in motors, or why the cook gets up at six and Mother at ten. In their mimetic play too this sense of caste,—quite a different thing, let us note, from snobbishness,—expresses itself. Playing together they like their rôles to be fixed. I remember a little boy who was always cast in playing parade for "the nigger what carries the water." Indignant and surprised were the other paraders when he one day rebelled.

But in no respect are children's views on occupational propriety so strongly marked as in sex. Their judgments are frankly stated. "Girls can't play soldier—or policeman." . . . "You can't be the doctor, you're a girl." . . . "Boys can't keep house." . . . "Who ever heard of a boy taking care of the baby?" If by chance a child has had the example before its eyes of a parent engaged in some occupation unusual to his or her sex, the association in the child's mind between sex and the given occupation may differ from that held by other children, but it is none the less fixed. One day Elizabeth Blackwell's adopted daughter, a child of seven who always called her adoptive mother "doctor" was present while a man doctor was calling. After he had left, the little girl went to Dr. Blackwell with a puzzled face, exclaiming, "Doctor, how very odd it is to hear a *man* called Doctor!" Dr. Blackwell probably explained to the child that there were men doctors, but as a rule a child's associations of ideas about sex and occupations are re-enforced by its elders. Are not doll houses, toy kitchens and laundries, and dinner sets the proper Christmas presents for a girl; and for a boy, engines and tracks, toy stables and soldiers?

The earliest division of labor was according to sex, and every-

where in savagery it is rigidly maintained. As a rule a man may not be a gardener or a woman a stockraiser. To fetch and carry, to market or shop, is usually so much a woman's business that a man can be helpful to her in such chores only at the risk of ridicule or even infamy. In different tribes of course the sexes may specialize along different economic lines, but once these lines are fixed they cannot depart from them. A Betchuana woman may not milk a cow, nor a man, a goat. Among the Akikúyus twine for some purposes must be made by the men, for other purposes by the women. Firemaking among the Wa-taveita is a man's secret. How best to communicate with the gods and engage their interest is a far more common secret of sex. From secular as well as religious affairs of state women too are generally excluded.

Such differentiations of sex interests must make, of course, for an actual separation of the sexes. In the lives of both savages and children this separation is moreover directly abetted. At an age varying from six or seven to adolescence or even later savage boys have to go into a boy's club house where they can be visited only surreptitiously if at all by their mothers. As for their sisters or other girls, quite commonly they may not speak to them or even pass them by. Of course they must neither play nor work with them. Sometimes little girls are also segregated and until they "come out" they too have to be very careful of appearances. Such ceremonial "avoidance" continues with more or less let-up of course through life. In many a savage village there is a pale beyond which women may not go. The Todas of India have whole villages women may not enter. In many tribes a woman meeting a man on the common trail or road must turn out for him or he for her. As with us, women are regularly excluded from the men's club house and granted only from time to time a "ladies' day." Often in their homes they may not eat with men; sometimes they are confined to their own part of the house,—although haremilk and smoking-room are more characteristic of a later culture.

In its nurseries little girls and boys are kept apart. At seven Chinese boys and girls do not occupy the same mat or eat together, and at ten girls cease to go out from the women's apartments. A Turkish woman, Neyr-el-Nirsa, one of the *désenchantées*, has just been telling us in her "European Impressions" how miserable she was when one day her Koran teacher said that the time had come for her, a girl of twelve, to put on the *yashmak* and the *feradjé* and separate from many of her playmates. The time comes too when we seat our little boys and girls on different sides of the school aisle or tell our girls not to be tomboys or more or less ridicule our boys if they play with girls—a form of derision they seldom, to be sure, expose themselves to. If they do, and if they persist notwithstanding humor in their objectionable companionships, parents become discouraged. "I don't know what to do about Harry, he likes to play only with girls," declares Harry's distressed mother, less resourceful than the old men of the Wiraijuri Blackfellows who pretend to cut out bits of a woman's apron from the legs of a boy overfond of feminine society.

HOW THE ENGLISH TEACH THE WAR

By CHARLES E. McCORKLE, Clark University

In September, 1914, the London County Council sent a circular to all the teachers in the London Elementary Schools mentioning the horrors and heroisms of the war as well as the tolls exacted from each family. The teachers were commended for their true national service in the past, and were shown the duties, obligations, opportunities and responsibilities created by the war which now confronts them. The answering of children's questions, "WHY" the empty chair in the home, the deprived luxuries, the rhythm and tramp of soldiers, the flying of unfamiliar flags, the singing of new songs, etc., become the task and special mission of the teachers and the heads of schools. The homes should be reached through the children, creating a feeling of righteousness of cause and a realization of national need and honor, thus teaching true patriotism, love for country and national unity. It is thought this can be taught best in the schools through Literature, History and English, Economic Aspects, Geography, Study of National Flags, and Prayer,—on all of which later the Council issued suggestions for instruction.

The literature suggested is that which bears upon or has been inspired by war. Not only patriotic poetry and prose should be chosen, but that which "by qualities of imagination and moral insight elevates and fortifies the spirits of readers, young and old." This involves a short resumé of history,—England's three great conflicts, each with a great military power aiming at a world-wide dominion—with Philip of Spain, with Louis XIV of France and with Napoleon. The conflict with Philip of Spain is portrayed in much of the literary spirit of Elizabethan England. Especially did the Napoleonic struggle bring to the forefront such noted men as Wordsworth, Matthew Arnold and Coleridge. For each of the great conflicts, appropriate literature has been suggested.

Concentration of the student's attention upon the main principles and tendencies involved and the events that have led up to the present European war, and a description of the moral and material forces arrayed against one another, should constitute the History and English teaching. Because of the lack of time in the schools, details should be read at home. An historical outline of Europe during the past one hundred years is a prerequisite for the understanding of the present war and its issues. The Napoleonic war, like the present conflict, involved a group of allied powers battling against a military autocracy which aimed at world-wide dominion. The suggested points of fundamental importance for study are, kinds of governments, growth, expansion, foreign and colonial policies, military and naval organizations, etc., of all the nations involved in the great struggle. The Times Literary Supplement contains a detailed bibliography for the teachers.

The economic aspect can be best approached through finance. This demands an explanation of the "nature of bills of exchange, how they are drawn, accepted, discounted and met," etc., how the destruc-

tion of the national and private credit system was imminent at the outbreak of the war, how this destruction would have paralysed industry and commerce, ruining both great and small business men, and how the rush of creditors was met by a series of legal and administrative steps such as the Moratorium, Premoratorium bills, etc. It is thought that some phases of stock exchange and the like may be too technical, but the more general as well as the greater part of all economic aspects may be comprehended in this instruction.

The study of national flags is an interesting, instructive and beneficial topic giving much information along historical, literary, patriotic and symbolic phases.

The Council's suggested prayer is one that needs no comment for it breathes into the souls of the children a message unobtained otherwise.¹

¹ For geography instruction, see the March, 1915, issue of the *Pedagogical Seminary*.

BOOK NOTES

The psychological methods of testing intelligence. By WILLIAM STERN. Translated from the German by Guy Montrose Whipple. Baltimore, Warwick & York, 1914. 160 p.

After discussing the nature and problem of testing intelligence, the following topics are treated: the single test and series of tests, method of age-gradation, the principle of the Binet-Simon method, resultant values, with normal children, on the general distribution of the level of intelligence, age and nationality, different social strata, intelligence and school performance, sex differences, repeated tests with the same children, abnormal children, mental arrest, points of view for reorganization and improvement of gradation methods, selection and appraisement of tests, composition of series for the several years, computation of final values, estimation and the testing of finer gradations of intelligence or the method of ranks, teachers' estimations, tests by school performance, rank-orders obtained by tests.

The wayward child; a study of the causes of crime. By HANNAH KENT SCHOFF. Indianapolis, Bobbs-Merrill Company, c. 1915. 274 p.

This book seems especially addressed to those whose interest has not yet been awakened in the work of saving the wayward child. The author's method is to get directly from criminals the story of their lives, for the purpose of finding out what conditions led to their downfall. She secured from a large number of inmates of jails frank statements of their early careers. Her correspondents were evidently genuinely interested and sought to tell truthfully the experiences that led them into conflict with the law and often pointed out what ought to be done to save other young people from a criminal life. She supplemented her questionnaire by direct visits to many prisoners. The author is the president of the National Congress of Mothers and has had long and active acquaintance with reforms in the line represented by this book.

Mental and physical measurements of working children. By HELEN THOMPSON WOOLLEY and CHARLOTTE RUST FISCHER. (Psychological Monographs, Vol. XVIII, No. 1, December, 1914.) Princeton, N. J., Psychological Review Company. 247 p.

This is a very painstaking and elaborate study, setting forth in details the methods, and containing the results, on the following fifteen items: height, weight, visual and auditory acuity, vital capacity, strength and steadiness of hand, rapidity of movement, card sorting, cancellation, memory, substitution tests, completion of sentences, association by opposites, and the puzzle box tests. The work of course abounds in tables and curves. Voluminous as it is, it is "a small portion only of a larger investigation" with a view to a comprehensive study of child labor to show its effects on children who enter industry early. Valuable as it is, it would be much more so if it had a convenient summary.

Education through play. By HENRY S. CURTIS. New York, Macmillan Company, 1915. 359 p.

Dr. Curtis is a pioneer and might almost be called a veteran in the introduction of play and playgrounds in this country, and perhaps he has done more than any other worker in this field. In this work he discusses what is play, play as physical training, play as intellectual training, relations to the formation of habit and character, play in German, English, American and rural schools, place of play in the curriculum, athletics in secondary schools and colleges, recreation at summer schools, a summer playground, summer camp, school as a social center, training of the play teacher, and rules for about a score of games. It is, as the last ought to be, the best book known to the writer of this note on the subject.

School hygiene. By LEO BURGERSTEIN. Translated by Beatrice L. Stevenson and Anna L. Von Der Osten. New York, F. A. Stokes Company, c. 1905. 188 p.

It was well worth while to translate this admirable little manual by the greatest living authority on school hygiene. The ground covered is, first, the schoolhouse, including planning and erection, lighting, ventilation and heating, the classroom and its equipment, other rooms, grounds and facilities. Second comes the hygiene of instruction, treating after general considerations the number of pupils and curriculum, hygiene of different subjects, home-work, examinations, etc., and boarding schools. Third comes instruction in hygiene, fourth, school diseases and medical inspection, and fifth, hygiene of the teaching profession.

Towards racial health. By NORAH H. MARCH, with a foreword by J. Arthur Thomson. London, George Routledge & Sons, 1915. 326 p.

This work treats of the physical, mental, emotional development of the child, the care of children generally, psychological aspects of supervision, nature study and the service of sex instruction, new aids to understanding the biology of sex, ethical training, education for parenthood, and safeguarding. An appendix contains suggestions for parents on how to answer children's questions and how to prepare children for pubertal changes, with a section on special hygiene for girls, the physiology of human reproduction, care of animals, and notes on plant life.

The boy problem in the home. By WILLIAM BYRON FORBUSH. Boston, Pilgrim Press, c. 1915. 287 p.

The first book is devoted to home training for young boys, the child's attitude to the parents, method of government, by punishment and reward, sex discipline, religious nurture, facts for encouragement. The second book is on home training of school boys, which follows the same topics. Book three is on the home training of adolescent boys, and here the author discusses the development of adolescence, methods of government, ruling motives, the prodigal, sex discipline, and religious nurture.

Outlines of child study. By WILLIAM A. MCKEEVER. New York, Macmillan Company, 1915. 181 p.

In the author's lecture trips he has often had to address organizations interested in child study, and here he has brought together his

insights on this topic. As to organization, he treats purpose and promise, plan and fulfillment, officers and members, methods and management, the laboratory idea of child study. Part two includes child study programs, the mother and infant, pre-adolescent boy and girl, vacation activities of the young, adolescent training problems, the problem of fatherhood, vacation and home life, religious training of the young, the country boy and girl. Part three is devoted to child study literature.

Child study; with special application to the teaching of religion. By REV. G. H. DIX, with preface by Rev. H. A. Lester. London, Longmans, Green & Co., 1915. 134 p.

The author discusses the science of child study, the periods of child life, the growing infant, developing instincts, wonder, curiosity, interest, attention, self-activity, educational and volitional activity, the child of the kindergarten, middle and senior schools, early adolescence, and the religion of childhood.

Discipline as a school problem. By ARTHUR C. PERRY. Boston, Houghton Mifflin Company, c. 1915. 273 p.

Discipline is a problem we shall always have with us. It is considered here first as an individual problem, with the psychology of conduct, intellect, feelings, will, in all sixteen different chapters. Then discipline is treated as a class problem, to chapter 25, and thirdly as a school problem, ending with chapter 34.

Eugenics. By EDGAR SCHUSTER. Baltimore, Warwick & York. 264 p.

The author first treats eugenics in ancient times, then passes to Galton and the eugenics of to-day, its relations to evolution, Mendelism, a statistical study of inheritance, its relations to ability, tuberculosis, insanity, feeble-mindedness and epilepsy, the influence of the environment, selective agencies, social control and suggestions for a practical policy, bibliography.

The Chinese system of public education. By PING WEN KUO. New York, Teachers College, Columbia University, 1915. 209 p.

This is an interesting study beginning with 2357 B. C. and outlining the ancient system. The second chapter shows its decadence and brings us down to 206 B. C. The third is the development to subsequent times and comes down to 1842. The fourth chapter depicts the transition from traditional to modern education, ending in 1905, while the construction of the modern educational system takes us to 1911. We are then told how education was reorganized under the republic, and present-day problems are treated, followed by a summary and conclusions.

Cartoons in character. By ALLYN K. FOSTER. New York, Association Press, 1915. 192 p.

This book consists of fifty-five short articles, many of which are types of human character, Willie Wilts, Timothy Toady, Chris. Cross, Philip Flabby, Billy Blunt, etc. There are also papers on more general subjects, fiction, heroism, patience, sects, agitation, etc. The articles are snappy, catchy, and show much insight into and sympathy with human nature. The author is a popular and effective preacher and reformer.

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SOMATIC DEVELOPMENT, A CRITERION OF MENTAL MEASUREMENT

By FRANCIS LEE DUNHAM, M. D., Clark University

INTRODUCTION

A popular philosopher has said: "The future is for those who can overwork." However trite the expression, it is nevertheless significant, involving as it does a consideration of the capacity for overwork, the ability to maintain indefinitely a terminal stimulation without dissociating cerebration. Its importance from a social standpoint, if one measures the significance of quality with quantity as primal factors in the mental development of mankind, was of primitive recognition, dominating the development of the gregarious instinct. A return to this atavistic attitude is the basis for the development of a race of super-workers.

NEED OF ADEQUATE MEASURE

In order to determine the capacity for overwork, one must have a measure of mental capability, a quantitative standard of known exactness. Such a working hypothesis has been attempted with more or less success from a psychological determinism. The development, however, of a unit measure from psycho-genetic phenomena alone would seem illogical, and the variance of results obtained from its use indicates an inadequate structure. The attempt to apply to subjective states a series of objective terms, not all of which conform to psychic manifestations, has resulted in a dissociation of the embryological continuity of mind and body. A consideration

of neuronic integrity involves the microscopic examination of anatomical structure, but even more a correlation of physiological, interglandular activities quite alien to the immediate area involved.

Verworn has well conceived the fallacy of an endeavor to explain a process in general by seeking for its causes when he says: "The cause being found, the process is considered as fully accounted for. As if such a complicated process as development could be explained by a single factor."

RELATION OF FACTORS IN DEVELOPMENT

An adequate analysis of the quantity and quality of mental capacity must always examine the relation of anatomical, physiological, genetic and environmental factors, the phenomena, so to speak, of a human biology. With the aid of this objective investigation, it is possible to discover the significance of laws which empirical observation has shown to exist in abnormal personalities, to interpret the differences, and to explain the genesis of certain psychic tendencies and of special peculiarities predominant in the various types of mentality. Binet, in his pioneer investigation of the problem, recognized this tendency to incompleteness. "It should not make us forget," said he, "that there is another, the physical examination." Attention is fixed so engrossingly upon one organ that general principles are lost sight of, their place being taken by inflated particulars.

The only method of dealing with this narrowness is to look at the subject from the broad aspect of genetic and general biology. Nevertheless, many examiners of school children, of mental defectives and moral offenders, justify the results of their classification of intelligence by the use of a psychological test, which they wield as a complete armament rather than as an element of equipment.

Nor is this tendency, it must be confessed, confined entirely to the field of psychology. Certain observers have advocated a grading of intelligence on the basis of anatomical structure alone, others on the basis of a physiological development, still others have been quite as insistent on the potency of anthropometric results. The truth is that a complete examination exacts toll from various laboratories.

A technical efficiency is demanded in the various fields which render our analysis more searching, whereby it may be possible to predict more intelligently the correlation of somatic and psychic decadence. The examination of perfectly healthy children in public elementary schools will often reveal the presence of so-called stigmata among the mentally

alert, and the ament is often an animal of physical health. The development of a series of norms from the inexhaustible clinical material yet untouched in the fallows of the public school is the first step in rendering possible a more adequate method of judging the quality and quantity of intelligence.

TERM SOMATIC DEFINED

In order to indicate their specific nature, advocates of various tests have devised the terms "anatomical age," "physiological age," "anthropological age," etc., to distinguish their method from the "psychological" or "mental" test.

Accuracy in scientific terminology is of more than academic interest and justifies the importance of noting that no one of these designations expresses the whole truth.

There is need of a concise term to indicate the cognate factors in the development of a composite, biological examination of the child. Such a term is somatic, not restricted to its anatomical or physiological use, but conforming more nearly to its primitive significance.

Such a designation converges the fundamentals of the several tests already noted along with others of embryonic and genetic importance. Moreover, these may be compared with psychic structures, and with the two expressions one has a comprehensive classification for all subjective and objective phenomena.

FACTORS INVOLVED IN SOMATIC EXAMINATION

A systematic examination to determine a child's somatic development should begin with a consideration of his genetic history, for here is displayed the promise of future mentality. Disorganization of the germinal structure, an unfavorable environment under which conception was promoted, abnormality of prenatal growth, premature birth, all tend to the production of embryological disharmonies which may persist for years and only emerge through the slow processes of growth.

In an objective sense these physical imperfections bear a striking resemblance to the subjective phenomena of the infantile complex in mental pathology.

There is a distinct continuity of embryologic associations from the cradle to the grave. Sir James Paget, recognizing this, said: "A slow time rate is often observed in children who are prematurely born. Facts relating to delayed growth often cause chronometric errors of grave importance. I venture to think that our practice would be improved if local defects of working power were more often thought of as errors in the time rate of life in the defective parts."

BIOLOGICAL CONSIDERATION OF GROWTH

Recent investigations in the phenomena of growth tend to strengthen still further the mechanistic conception of life. Indeed the aim of biology may well be conceived as an attempt to make a perfectly clear working hypothesis of the peculiar phenomena of growth that are due to the play of physical and chemical environmental factors on intra-protoplasmic mechanisms. A pertinent instance is found in the purely physical causation of the decussation of nerve fibres and again in the development of the lymphatic system from vascular anlagen in response to budding bio-chemical irritation.

One of the fundamental problems of growth therefore relates to the action of external stimuli upon normal development. Is the fertilized ovum to be regarded as a composite structure, made up of various chemical anlagen distributed throughout the cytoplasm in definite positions, or is it a unicellular organism with ability to elaborate ferments at the successive genetic stages required for its complete development? The former hypothesis presupposes the embryonic parts, prelocalized in the cytoplasm, appearing as differentiation progresses. The latter supposition presupposes no differentiation of parts, the various regions of the cytoplasm being of equipotential value.

Although there are many linking factors associating the developmental processes, and one must consider the general physico-chemical factors underlying all growth, the fact is nevertheless well established that structural differentiation is dependent upon a series of complex and progressive oxidizations. In the later stages of development we are dealing with an organism whose chemical constitution is radically different from that of the primitive ovum and whose structure demands a supply of various chemical substances for its appropriation. Most of the developmental defects in the embryo are due to disharmonies involving its differentiative stage and only secondarily to defective growth phenomena. Bearing in mind then the chemical modifications occurring during the differentiating cycle of the embryo it is fair to assume that at certain specific times in the genesis of the anlagen their chemical composition is such as to render them more ready participants to the action of chemical reagents. It must be demonstrated, however, that the inhibiting action was exerted upon the undivided egg, the proanlagen, and not upon the anlagen or chemically complete ovum. Only by this method can we determine which is the true hypothesis. It seems possible that the human ovum requires little else than a sufficient supply of oxygen for normal differentiation during its early stages of development and that an insufficient supply would result from

an imperfect imbedding of the ovum in the uterine mucosa. It therefore seems probable that certain organic disharmonies, such for example as spina bifida in man, might find their explanation in faulty oxidation. We are therefore justified in concluding that the causative factor is exerted in the production of unfavorable reactions on the enzymes of the egg rather than by a specific action of the agent itself. An area of altered protoplasm resulting from reaction to irritants serves as a mechanical check to the approximation of the lips of the blastopore during the backward progression of the later and an abnormal condition of organic structure results. The importance of synchronized tempo in the processes concerned is strongly emphasized.

The results of biological investigations of growth indicate however that development, in multicellular organisms and their egg cells, requires other factors than the simple assumption of synthetic ferments or mechanisms. The immortality of such cells can hardly be assumed when one is obliged to rely upon the processes of fertilization or upon parthenogenetic methods to keep them alive. In spite of its potential immortality the unfertilized egg is doomed to die.

Growth embraces not only a relation to nutrition but also to stimulation. The cell and the crystal show similarities in development. Under favorable conditions both are able to increase in size yet one is able to evolve a composite structure from various split products while the other can only react in a supersaturated solution of its own substance. Consequently in a study of the cell it is not the increase of mass alone but the mechanism of growth that must be investigated.

The size of the egg cell is probably always greater than the corresponding somatic cells, therefore primary mitosis does not result, so far as may be seen, in an increase of structural size. The cells resulting from this division must first regress to the size of the somatic cells appropriate to the species before the usual cycle of secondary growth can begin. In all probability growth does occur, but it is qualitative rather than quantitative in character. The potential activity of the cell is maintained, but in a resting state, till fertilization takes place. The mechanism whereby development is inaugurated seems to result in an alteration of the surface layer of cells. This consists, partially at least, in a membrane formation induced by the influence of some cytolytic agent acting upon the cortical layer of the egg and resulting in an increase in the rate of oxidations within. There is an individual immunity against the automatic action of lysins against their own germinal cells else each animal would induce a development of all its eggs before they leave the ovary. It is nevertheless

possible that cellular permeability may at times induce parthenogenetic disharmonies in the development of certain spontaneous, ovarian tumors and similar somatic structures. The important fact to be noted is that this alteration is to some extent reversible. When the egg cell is reverted to its proper somatic size it is ready for fertilization. If this occurs, development in size progresses, otherwise the egg will, under ordinary circumstances, soon die. However, an important possibility may here intervene. The unfertilized egg may start to develop, then stop and revert to its former stage save that we have now, in place of the original egg, two, four, eight, etc., smaller cells. In spite of the fact that they possess the apparatus for normal cell division these eggs revert into the resting stage although they may be later fertilized in the usual manner. The interesting question here suggested is what caused these eggs to go back to the resting stage? Loeb believes that it is due to a sudden reversion of the change in the cortical layer accompanied by a reversion in the rate of oxidations. Thus its ability to alternate between a resting and an active condition might imply the egg's immortality. But does this satisfy the facts respecting the somatic cells? Before the egg is mature its duration of life seems longer yet it is not known that a similar condition exists in the case of other forms of cells. Consequently we must admit that the resting somatic cell is not comparable in this respect to the unfertilized egg.

We know, however, that resting somatic cells may be induced to grow by the action of certain specific substances circulating in the blood and that this action takes place independently of the central nervous system. The action of such substances as the secretion of the thyroid and pituitary glands and of the corpus luteum indicate that specific substances induce growth of special parts of the body rather than of the whole body. How this is brought about, whether by a condition analogous to the cortical layer of the germ cell we do not as yet know. The idea that the products of internal secretions act rather upon the cell through its metabolism than directly is strongly supported by experimental data. The presence of lymphocytes has been indicated also as a definite inhibitory factor in certain aspects of growth. In many lower animals and in plants whole organs may be induced to grow as a consequence of mutilation, some however being influenced more directly than others. Loeb is inclined to attribute both the inhibiting and accelerating effect to phenomena of agglutination which exist between the transportation of special material and the localization and inducement to growth, the mutilation leading to the gathering of elements in spots where without the mutilation they would not have collected.

EMBRYOLOGICAL CONSIDERATION OF GROWTH

As the embryonic structures which constitute the animal body become differentiated into distinct tissues, the animal as a whole becomes more highly organized. The fundamental tissues, epithelial, connective, muscular, and nervous, exhibit one or more characteristics of protoplasm developing special functions, whereas other characteristics are lacking, or are less evident. The combined activities of these differentiated tissues are exhibited in the life history of the entire animal. For the understanding of this structure it is important to know the proportions of the several elements of the tissues, thus differentiating the particular tissue and the variety of animal.

A comprehensive knowledge of the child shows that one tissue system varies in a definite relation to another or to other systems. The muscles of the face, scalp and external ear, for example, are peculiar in that they are the physical basis into which many mental states are reflected and in which they are realized. Through them mental conditions are manifested. It is found that the differentiation of these muscles, from the so-called platysma sheet, into well-marked and separate muscles proceeds simultaneously with the development of the brain. The more highly convoluted the brain of any primate, the more highly specialized are its facial muscles.

The correlation between retrogressive development of the external ear and of the hard palate, which some investigators have attempted to prove, is but the reflection of a general incompleteness in the fusion of processes arising from the mandibular and hyoid arches.

A knowledge of the transformation of the foetal to the adult pharynx is of the utmost practical importance. It not only explains the occurrence of pathological conditions, but accounts for phenomena throwing light on the nature and anomalies of the thymus, thyroid and tonsil.

This brief epitome from the point of view of the embryologist is sufficient to indicate the character of structural differences presented in this most prolific field, a survey of which would tend toward an early and more complete understanding respecting the results of further tests of mentality.

PHYSICAL CONSIDERATION OF GROWTH

It is a well-known fact that the growth of an animal in weight or linear dimensions does not proceed with uniformly retarded or accelerated velocity from the moment of its inception until the period of its completion. On the contrary, growth will at first take place relatively slowly, then more

rapidly and then again more slowly, thus yielding an S-shaped curve of growth. Two or three of these sigmoid curves may be superimposed upon one another in the complete curve of the growth of an animal. Robertson has suggested that the period of growth covered by a single curve should be termed a growth-cycle. The extra-uterine growth of man consists of two growth cycles and a fraction of a third, the inception of which occurs during the period of intra-uterine growth. There are therefore, in the normal development of man, probably four growth-cycles included in the intra- and extra-uterine stages:

- I. Very brief "autostatic," probably preceding implantation of the embryo.
- II. Lasting from the beginning of development until nearly the end of the first year of extra-uterine life. Maximum velocity at 1.66 months in males, and 2.47 months in females, "autokinetic."
- III. Starting during or close to the completion of the first year of extra-uterine growth and partially fusing into the succeeding cycle. Maximum rate at about 5.5 years in both sexes, "autostatic."
- IV. Maximum velocity at about 14.5 years in females and 16.5 years in males. Culminating on the attainment of adult weight. Probably "autokinetic."

When we apply adult standards of measurement to children we are faced with the fact that, even if we succeed in measuring their present powers, we are still a long way from being able to estimate their latent ability for the forces of growth in the mental and physical development of the child are both hidden and often incalculable. An attempt to determine this physical force in terms of a formula which should express the relation between height, chest girth and weight was attempted in 1900 by Pignet. This formula consists essentially in an expression of the numeral obtained by subtracting the two numbers representing chest girth in centimeters and weight in kilograms from the numeral indicating the height in centimeters. This result, in the absence of organic disease, seems to bear a constant relation to bodily vigor.

An effective method of detecting departures from normal growth has been devised by Hawkins and is largely used in English schools. To obtain this 40,000 measurements of height, weight and chest girth were collected. These were grouped into proper ages of six months interval from ten to eighteen years. Each group was separated into twenty divisions so that each division represented 5% of the total meas-

urements for that age. These were therefore 5% of all the boys of that age who were of that particular height, weight and chest girth. Each of these divisions was then named as grade 1, 2, 3 * * * 20, and each boy was referred to the appropriate grade to which his height assigned him. An opportunity is thus given of grading each boy with his fellows of equal age. If he is not normal and his weight does not correspond with his height his grading in the three qualities will not correspond. He may be among the tall boys for height and not among the heavy boys for weight. If measurements be taken at successive periods of life it is possible to note whether the boy remains at one particular grade in his height, weight or chest girth, at 12, 13, 14, etc. It can also be noted whether his weight or his chest girth, which was at one time in proportion to his height, begins to fall off at 16 and 17. The great value of this method comes out when one estimates the stress of school life during adolescence.

"It is essential to have clear ideas of the width of the physiological range that exists in the development of the neuromuscular system in different individuals, quite apart from the pathological results of past disease and ill-health. There are practically three natural physiological types of development of the neuro-muscular system.

"1. Adapted for the exhibition of massive weight. The whole physical frame here is very big. The large muscles of spine, shoulder, hip and thigh, neck and upper arm are coarse-fibred and well developed. The movements are frequently slow, but they give one the impression of considerable power. This condition may occur both among the dull and the clever boys.

"2. Adapted both for bodily agility and bodily strength. The bodily frame here is often less massive in build, though large and well knit. The muscles of upper arm and shoulder, though not big, are still well developed and full of tone, and are fitted for rapid and effective action. The neck is long and thick and well set on the trunk and the body held very erect. The chest, though not necessarily deep, has wide range of action; the difference between inspiration and expiration may be as much as 4 or 5 more inches. Such a boy is a born boxer, swimmer, runner, or athlete, and will develop in any direction he chooses to train his powers.

"3. The third type needs particular care and supervision during school life if he is ultimately to put forth his full innate powers. The larger limb muscles and the bony framework are comparatively feebly developed. The nervous energy, though it may be very considerable in amount, is irregularly distributed, and tends to manifest itself either in some special

handicraft or in some special intellectual channel, such as great language facilities, or its near ally, the mathematical faculty, or great imaginative faculties. Here we need constantly to distinguish between sustained strength and short-lived excitability, for, with rapid expenditure of nervous energy, rapid exhaustion is apt to set in. The sense of fatigue that should precede exhaustion and warn us of its near approach is apt to be absent. Owing to the small size of the bodily muscles these children make a poor show when tested by nutritional standards or by standards of bodily physique. To understand them properly we need to remember that though their intelligence or their dexterity is well in advance of their fellows, yet other parts of their physical frame are often behind."

PERIODS OF GROWTH

To determine the normality of physical growth the four following periods should be studied in detail: the first year, the first to the seventh year, the seventh to the thirteenth year, and from the thirteenth to the eighteenth year. The first year, being the nursing period, is burdened with the results of mental emotions affecting the mother's milk. From the first to the seventh year, a child is predisposed to diseases of the nervous system and should be watched particularly at the periods of weaning and dentition, and for intestinal worms, and convulsions. The period from seven to thirteen years is noticeable for the appearance of chorea and other rheumatic manifestations and physical overstrain, while the period from thirteen to eighteen, being that of puberty, is of equal importance.

A number of investigations have been made to determine the alternation in periods of development of the various parts of the body.

It seems to be generally held that there are one or more periods of acceleration alternating with periods of retardation in the development of each structural unit of the body. The periods of acceleration in the development of one structure may be synchronous with the periods of retardation in the development of another, and the two may be called complementary structures.

Each organ or structure has a critical period when it is developing most rapidly and when it is probably most susceptible to its environment.

Bodily growth should always be determined from a consideration of growth of the part in respect of its previous size, its growth compared to the adult structure, and its growth in relation to total individual growth.

In a consideration of development laws should be generally applicable to all members of the species. Yet inasmuch as certain parts may be pathological, for example the brain in man in its relation to other forms and to evolution, it is frequently necessary to modify morphological criteria in their application to human structures.

Respecting the growth cycles in the human child, there is no indication, according to Robertson, of more than one such period during intra-uterine life subsequent to the implantation of the ovum. This is interrupted by birth when not half completed and culminates at the end of the first year of post-natal life.

The first period of post-natal growth, according to Bean, is associated with a rapid development of the trunk and extremities. This is followed by the eruption of the temporary teeth associated with the rapid development of the brain. This reminds us of the development of the trunk in the first month of pre-natal life, followed by the rapid development of the head. Between the arrival of the temporary teeth and the second acceleration of growth in stature, the heart and kidneys are apparently developing most rapidly. The eruption of the first permanent teeth, followed by the third acceleration of growth in stature, is related to the post-natal development of the liver, stomach, and intestines. The third period of rapid tooth development, followed by the fourth period of rapid growth in stature, succeeds this and precedes puberty, after which the growth of boys is retarded and the growth of girls almost ceases.

A presentation of the supposed causes of alternation in development would be incomplete without suggesting the influence of mechanical factors and the internal secretions. The ductless glands play such a part in development that if the normal effects of the secretions may be inferred from their abnormal effect, this factor is of primary importance in any somatic investigation.

INFLUENCE OF DUCTLESS GLANDS ON GROWTH

By studying the results obtained in cases of excessive action of the ductless glands it is possible to arrive at some conclusion as to their normal effect on processes of growth and development.

Those who approach the subject from the laboratory side, however, tend to lose themselves in the mazes of abstract science; those from the hospital side tend to come prematurely to conclusions which are not scientific. It is probable that though the ductless glands are of great importance they are

only a part of the machinery of development. The inhibition or reinforcement of such correlations of the body as are carried on through the medium of chemical secretions or hormones has nevertheless exerted a wide influence toward a more scientific consideration of somatic adjustment and mental functioning.

"We find that by virtue of their secretions, or in some more cryptic manner, these glands preside over certain correlations of the body. These correlations are by no means rigid, but are, indeed, exceedingly variable, and this variability is most apt to be shown when circumstances are abnormal. The adjusting mechanism of development is not only flexible, but is more or less reciprocal, so that a ductless gland both influences development and is itself influenced by the changes of general development.

"In the harmony which is produced by the concerted action of the ductless glands we have reason to suppose that the leading part is played by the thyroid. This supplies a stimulus for the metabolism of the body as a whole. During infancy and childhood, when it is most important that the fires of metabolism should be controlled, the influence of the thyroid is checked by the thymus gland, by the lymphatic system in general, and perhaps by the pineal gland. These also bring about that delay of sexual activity which is so essential to the proper maturation and stability of the somatic faculties. Probably the first to break through this cordon of conservative influences is the adrenal system which awakens the dormant sexual organs and hastens the growth of the muscular and skeletal systems. At about the same time the skeletal system is still further stimulated by a secretion from the pituitary gland. This secretion quickens the development of every organ in the body, including the sex organs. These latter now ripen apace, and assisted by the combined action of the ductless glands, some animating, others restraining, carry the development of the body in waves and tides to its flood."

RELATION OF PHYSICAL ANTHROPOLOGY TO SUBJECT

We must conclude that a study of the physical anthropology of children is also of the greatest importance for a knowledge of the conditions and laws of growth under varying conditions of environment. The difference of city and country form of population, the difference of American and European children, and the difference of type in various parts of our country is most striking. These problems are of great importance for the teacher because the functions of any organ and

also of the whole body are so closely related to its development and form. The nature of these correlations is by no means clear, but remains largely a matter for investigation. Nevertheless, its existence can not be doubted.

Axel Key found that the liability to sickness decreased with increase in growth and *vice versa*, so that the one may be taken for a measure of the other.

The first step to be taken in researches of this character should be the study of the growth of individual parts of the body in connection with their functions. The growth of the hands and strength, the changes in curvature of the skull, the relative development of face and head are among the most important.

DEVELOPMENT OF NERVOUS SYSTEM IN RELATION TO SOMATIC STRUCTURES

The stability of the child's nervous system may be estimated by the ease with which organic structure complies with established norms.

Abnormal conditions of the skeleton occur with extreme frequency in conditions of amentia, ill balance and semi-responsibility. The number of such children who do not present one or more well-marked organic anomalies is small.

As an example, one may consider the growth of the ears which alter slightly in shape as the child develops his bodily and mental features. An infant may be identified by its ears with the greatest ease for at least two years. After this, they gradually alter, more often in the actual shape and size of the pina than the way in which the rim is folded over.

The ear also shows the traits of the child's mental quality, and there seems to be a distinct correlation between its development and right and left-handedness.

Observations made on the ears of 200 abnormal subjects by MacAuliffe and Marie gave the following frequency of departure from normality:

Left ear	Stigmata	Right ear
10 times	Darwinian nodosity	7 times
17 "	Auricular separation	19 "
12 "	Transverse lobe	18 "
21 "	Separate lobe	40 "
32 "	Fold of antihelix convex	37 "
10 "	Tubercle of supratragus	11 "
20 "	No superior bend	23 "

Ears presenting two stigmata 25 right.

Ears presenting more than two stigmata 35 right

Ears presenting two stigmata 26 left.

Ears presenting more than two stigmata 22 left.

FORMULA FOR DETERMINING WEIGHT OF NERVOUS SYSTEM

Donaldson has attempted a suggestive test for comparing the weight of the nervous system with body weight by a formula constructed so as to express the normal changes in the weight and length of the body as related to the weight of the nervous system. For this purpose, frogs were used, but the results are said to be applicable to other vertebrates.

Sources of error to be avoided are limitations of size on account of which the nervous system bears a precocious relation to body weight and nutritive conditions of environment.

When proper conditions are fulfilled, results are determined with a high degree of accuracy. The weight in milligrams of the central nervous system, according to this formula, equals the log. of the weight of the frog in grams multiplied by $\sqrt[4]{L}$ when L = entire length in millimeters multiplied by 30, a constant peculiar to the species. This constant differs with different species and varieties, and represents in the bull frog $1/30$ of the observed weight. In other words, it represents the denominator of the number obtained by multiplying the log. of body weight by the fourth root of body length which was nearly a constant fraction of the observed weight of the central nervous system, and could, therefore, be made equal to the observed weight by multiplying it by a constant factor having the value of the denominator of the fraction.

In these experiments, the calculated results were almost identical with the observed weights.

SCHOOL PROGRESS AND PHYSICAL GROWTH

Shoemaker has pointed out how valuable from the standpoint of efficiency a regular weighing of children, in the schools, would prove, since all healthy children gain weight, and failure to do so should at once lead to investigation.

A study of physical growth and school progress by Baldwin is also indicative of the value of carefully conducted tests to determine height, weight, and lung capacity.

A number of valuable conclusions are drawn in this report, and a very thorough summary from an historical standpoint is given. The general conclusion is that if pedagogical age be accepted as a fair equivalent to mental development, the tall, heavy boys and girls with good lung capacity are older physiologically and further along in their stages toward mental maturity, as evidenced by school progress, than the short, light boys and girls.

It is further suggested that chronological grading be supplemented by the more logical method of physiological grading. "For a complete and comprehensive system of mental

tests to be used as a measuring scale of intelligence, it will be necessary to go further and supplement the psychological tests and include the essential criteria for determining the physiological age of the child. We have now reached a stage in our knowledge of child development when we can begin to search intelligently for these physiological criteria in order to formulate more adequate tests as measuring scales for intelligence and school standing. The grading of our schools must be adjusted to fit the mental and physiological age of the child in the place of its chronological age which is but fairly representative of the other two ages." Bolton has pointed out that the child's intellectual development depends more upon his chronological age than upon his mental superiority and Meumann has suggested that physiological age prescribes a definite limit which the memorial efficiency of even the intelligent child can not transcend, and that older children excel younger children simply because they are chronologically older.

TYPES OF MANKIND

From the standpoint of the biologist, Bryant's recent study of mankind considering nutritive idiosyncrasy, promises not only speculative considerations but also highly practical results. According to this theory, bodily form and intestinal length are correlated.

The genus homo is divided thereby into three classes: the carnivorous type, the herbivorous type, and an omnivorous type, the latter being omitted from this consideration as it includes individuals made up of the two factors in normal proportion and consequently healthy.

Inasmuch as medical investigation deals largely with abnormals, who require special care for maximal efficiency, variations of the terminal groups alone are contrasted.

Animals predisposed to one or the other of these extremes of food habit may within wide limits, when forced by necessity, reverse their normal manner of life, thereby inducing inharmonious reactions.

The carnivorous type is distinguished by a long, thin body form and a short, simple type of intestine. The complexion is sallow, cheek bones prominent, eyes near together, ears and nose long and thin, chin pointed, neck long, prominent Adam's apple, sloping shoulders, narrow costal angle, long waist, narrow hips and long extremities. Such is the quick thinking, quick acting, quick eating, high-strung individual with slow pulse, low blood pressure and subnormal temperature. This type would appear to be a negative organism, an inferior or very highly specialized type, in which the only

systems developed or remaining present in excess are those necessary to the perpetuation of the species—the central nervous and reproductive systems. This type seems to reach a more advanced age though it is more subject to such childhood diseases as carbohydrate intoxication and gastro-intestinal symptoms, tuberculosis, and in general diseases of ectodermal structures, that is, of the respiratory, digestive and nervous systems.

On the other hand, the herbivorous type presents a marked contrast. The body form is short and thick, the intestine long and complex. This is the slow thinking, easy going, slow eating individual with high pulse rate, blood pressure and temperature. He is shorter, heavier, of rosy complexion, round head and face, widely set eyes, ears thick and wide, nose flat and wide, chin and shoulders square, neck short and thick, wide costal angle, barrel chest, short waist, broad hips, wide, straight back and short, thick extremities. This type is a positive organism and is subject to diseases of mesodermal structures—the gall bladder, liver, arteries and cardio-renal organization.

From the standpoint of the student of growth, the analyses here suggested present interesting fields for investigation.

It would be distinctly worth while to be able to suggest by mere observation of bodily type, before using instruments of precision, that a child might reasonably be expected to fall within a suspicious category, and the hitherto unexplained discrepancy between many abnormalities and environmental factors could be answered by the susceptibility of the individual type to the influences of that particular situation.

STUDY OF CIRCULATION IN GROWTH

Studies of circulatory phenomena thus far undertaken are somewhat more suggestive than convincing. Minot in a study of growth quotes a series of observations made under his direction respecting pulse frequency and gives the following table of norms:

Age	Mean frequency, beats per minute
1-2	111
2-3	108
3-4	108
4-5	103
5-6	98
6-7	93
7-8	94
8-9	89
9-10	91
10-11	87
11-12	89

12-13	88
13-14	87
14-15	82
15-16	83
16-17	80
17-18	76

PUBESCENCE AND MENTAL DEVELOPMENT

A study of "physiological age" by Crampton considering the phenomena of adolescence is of particular interest because of its influence as a pioneer work in stimulating more rational procedures in physical testing and in grading. The pubes with reference to its piliferous development is taken as a basis for record, although there is no one definite sign to distinguish those on the verge of pubescence from those who will be several years immature.

A complete absence of hair and an abundance of the same is easy to distinguish and to designate the child as a pre-pubescent or immature or as a post-pubescent or mature. But the process of acquiring this growth is slow and it is therefore necessary to establish a pubescent or maturing class. This class includes all who have anything more than an abundant lanugo and less than a very well-defined covering.

The period of puberty being the time of the greatest physical and mental change, when old landmarks are fading and new ones are eagerly sought, is the age most prone to maladjustment.

It is at this particular epoch that a correlation between physiological age and chronological age is of greatest value. It is now that accelerations and retardations in growth rates, asymmetries and anomalies in structure, budding of new functions, in the change from an asexual to a sexual life, are developing.

It is only by objective signs that we are able to define its presence; the mere fact of age in years is of little value.

The total normal range of puberty is about eight and a half years and the variability one and a half years.

The pre-pubescent period begins at birth and ends with the beginning of the post-pubescent or adolescent period. This transition is often gradual. It begins by an evident and rapid growth of fine hair about the pubes. This readily distinguishable mark characterizes the beginning of pubescence. The second period commences with a pigmentation of this exaggerated growth. The last period, ending pubescence and establishing adolescence, ends with the appearance of the kink or twist which is definitely characteristic.

Definite correlations of pubescence periods with scholarship, weight, height and strength have been established.

Crampton well sums up the value of this examination as follows: "The school rebel and truant is often the boy whose teacher is unable from lack of discrimination or from organized authority to meet the demands of his maturing instincts. His demands, his enthusiasms, have gone on in the race and have left him tied to the post from which he is bound to free himself by means often of a questionable nature."

DEVELOPMENT OF TEETH

In an exhaustive study, both original and historical, by Bean the teeth are considered the most convenient and exact means of determining relative development of the individual, physically and mentally.

This investigator groups his subjects into two divisions, the hyperontomorphic, identical with the Mediterranean type, and the hypoontomorphic or brachycephalic type. Precocity in the eruption of the permanent teeth is regarded as a sign of hypermorphism in which the teeth are undergoing retrograde metamorphosis because they appear early and decay early. Therefore precocious children, who comprise most of this type, should be shielded from injuries to the alimentary, respiratory and nervous structures, to the diseases of which they are specially prone. Backwardness in the eruption of the permanent teeth is a sign of hypomorphism. Consequently the hypomorph should be shielded from diseases of structures of mesodermal origin, the hepatic, renal and cardio-vascular mechanisms.

The time of the most rapid eruption of the teeth and the time at which a majority have erupted is the same, and may be called the physiological standard of the teeth. This is shown in the following table:

	Girls	Boys
First molars	6	6.5
Med. incisors	6.5	7
Lat. incisors	8	8.5
Med. premolars	10	11
Canines.	10.5	11.5
Lat. premolars	10	11.5
Second molars	11.5	12.5

The eruption of the permanent teeth does not occur with the same rapidity at each age but there are waves of eruption of the teeth like waves of bodily growth although the two are not synchronous. The periods of acceleration in the eruption of the permanent teeth occur about the ages of 7 and 11 years. And the periods of retardation follow those of acceleration. It will be seen that the periods of acceleration in the eruption of the permanent teeth initiate or precede the periods

of rapid increase in stature. The eruption of the teeth through the gums is but evidence of their previous rapid development and there is doubtless a period of rest throughout the body between the periods of the rapid development of the teeth and the periods of rapid growth in stature.

Girls are more precocious in the periods of acceleration than the boys as well as in the average number of teeth at any age.

When the permanent teeth begin to erupt the lower teeth erupt before the upper in the first period of acceleration, the upper teeth erupt before the lower in the second period of acceleration, and the lower teeth again erupt before the upper in the final stages of eruption. The alternation in development seems to apply to abnormal as well as normal development.

The process of selection in evolution can not be passed over as a factor in the eruption of the teeth. The incisors and first molars develop early and are larger, following man's need of biting, chewing, gnawing and grinding essentials. The canines or the holding and tearing teeth are slowly retrograding. They develop late and are comparatively small. The third molars are also undergoing retrograde metamorphosis and the second molars erupt later than they once did.

From 7 to 14 years of age inclusive children above their usual school grade have 0.8 more teeth and children below 0.9 fewer teeth than children at grade. The difference is greatest at ten and eleven years when children above grade have 0.8 more and those below 1.5 fewer teeth than those at grade.

One of the most promising signs in distinguishing those on the verge of pubescence from those several years retarded is the eruption of the canine and second molar teeth.

This test should be of distinct value in the somatic examination for determining precocity or backwardness.

DEVELOPMENT OF OSSEOUS SYSTEM

Very important studies on the development of the bones of the hand have been made by Pryor.

In his investigation in bone development Pryor determined that bone deviations or variations are heritable. The presence of an abnormal condition is a family characteristic. It is far more so than a resemblance in features in that it will always be found in all the brothers and sisters. The starting point for congenital malformations evidently differs with the character of the deformity. When a condition is uni-lateral we can understand that the deviation may be purely embryonic. When it is bi-lateral, although it may not be symmetrical, it is evidently a heritable character, originating in the germ cell of one or both parents.

Pryor's Summary of Development is as follows:

Bone:

Os Magnum					
Fem.	Develops	during	the	3-4th	mos.
M.	"	"	"	7-8th	"
Unciform					
Fem.	"	"	"	3-4th	"
M.	"	"	"	7-8th	"
Cuneiform					
Fem.	"	"	"	13-14th	mos.
M.	"	early	in	3rd	year.
Semilunar					
Fem.	"	late	in	3rd	or early in 4th year.
M.	"	during	the	4-5th	year.
Scaphoid					
Fem.	"	about	the	4th	year.
M.	"	"	"	6th	"
Trapezoid					
Fem.	"	"	"	4-5th	year.
M.	"	"	"	5-6th	"
Trapezium					
Fem.	"	during	the	4-5th	year.
M.	"	early	in	the	8th year.
Pisiform					
Fem.	"	during	the	9-10th	year.
M.	"	"	"	12-13th	"

Starting from this basis Rotch concluded that during the development of the bones the epiphyseal line illustrates the relationship of the diaphysis and epiphysis to each other and to their surrounding structures. The epiphyses present a very definite anatomic appearance at different periods.

It is important to appreciate that the various epiphyses gradually appear and grow larger and larger according to the stage of development of the individual.

The wrist and hand seem to be the most practical anatomic parts for use as a general standard index on which to establish a classification based on growth in the grading of children.

The problem at once presents itself as a method of determining the normal development from birth to perhaps fourteen years of age.

In undertaking to classify the different periods of growth of early life on an anatomic basis which will be of practical school use, it is evident that some reliable anatomic standard should be readily obtained and should be determined in the living child with the least degree of complexity and in the most simple form possible.

For the purpose of obtaining a practical and rapid knowledge of the progressive normal changes which take place at different periods of child life, a practical and reliable index of development is represented by the hand and wrist.

It is fortunate that the carpal bones and the lower epiphysis of the radius and of the ulna furnish a progressive series of anatomic development year by year so that only in unusual cases will it be necessary to refer to the other epiphyses of the skeleton for the purpose of corroboration.

An interesting feature shown by the radiographs is the fact that hands may be long or short, broad or narrow and yet show the same anatomic development thus indicating their classification under the same group.

Again large bones do not necessarily imply advanced development.

It has also been noted that the normal appearance of the hands of boys and girls do not materially differ in this respect and that the left hand shows no marked differences in development from the right.

In order to represent this classification practically we should have before us pictures which represent the normal development of the special group in question and using this determine the child's anatomic age.

CONCLUSION

The preceding incomplete summary is suggestive, merely. Its object is to serve as a preliminary basis for the development of a complete, yet simple somatic examination for the use of directors of school hygiene. While this should supplement and precede the further psychological tests of mentality it could be used as a part of the semi-annual physical examination of public school children. In either case its results would offer data for a further consideration of the subject's physical precocity or backwardness and define the boundaries of his biological history.

EXPERIMENTAL STUDY OF DYNAMIC PERIODICITY AS INFLUENCED BY DIURNAL, WEEKLY, MONTHLY, SEASONAL AND YEARLY EFFICIENCY*

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I. AIM OF THE PRESENT RESEARCH

This article deals with dynamic periodicity, the normal recurrence of maxima and minima in strength during the day, week, month, season and year. The effects of temperature, humidity and atmospheric pressure are treated in connection with climatic influences. To some extent, the problems of mental and physical fatigue, and physical inactivity are given a place. The aim of these tests was (1) to verify some of the experimental results of previous investigators and (2) to introduce a new method of studying this very interesting problem of periodicity.

* This article is a very brief summary of a thesis submitted in partial fulfillment of the requirements for the degree, Doctor of Pedagogy, in the New York University, School of Pedagogy, 1914.

II. HISTORICAL SKETCH

There is a marked scarcity of data on the subject of dynamic periodicity. The problems and results of previous investigators throw some light, however, upon our own work. Regarding daily periodicity nearly all investigators have found both a morning and an afternoon maximum, with emphasis upon the morning crest, both for physical and mental efficiency: *e. g.*, Schuyten (20) found maximum points between 8 A. M. and 11 A. M., also between 2 P. M. and 4 P. M.; while the 2 P. M. record was greater than the 11 A. M. it was always less than the 8.30 A. M. record; Storey (21) found a rise until 10 A. M. or 11 A. M., followed by a decline until 1 P. M., which was followed by a rise until 4 P. M. and a drop until 6 P. M.; Marsh (15) found the daily strength efficiency low in the early morning with a rapid rise until 11 A. M., a level or slight decline until 1 P. M., and an increase with maximum at 5 P. M. and a decline until bedtime.

Regarding seasonal periodicity there is not so much agreement among authors as with daily periodicity. Schuyten and Peaks (19a) found a crest around December-January in physical strength; while Lobsien (13) and Peaks found the highest psychic capacity around December-January. Dexter (6, 7, 8) concluded that the time of year was not an important factor especially regarding misdemeanors. Schuyten found a decrease in the power to grip the dynamometer during both winter and summer and a rapid rise during spring and autumn. Peaks differs slightly at this point, finding the autumn rise to begin late and continue until January, and the spring rise having its crest in May. Dexter places much emphasis upon both barometric and hygrometric influences, especially the abnormal barometric influence. Lehmann and Pedersen (11c) conclude that both physical and mental work vary from day to day due to sunlight, temperature and barometric conditions. Huntington (11b) found that factory hands work fastest in November and slowest in January. Schuyten pointed out marked effects of temperature to which Lobsien added environmental conditions, especially geographical location.

With these points of emphasis in mind, we will proceed to the analysis of our own data.

III. PROCEDURE

Most of my tests were made by myself. Others who acted as subjects were nine graduate students, two ladies and seven gentlemen, two girls (ages 12 and 14 years) and one high school boy (age 17 years). The study was thus an individual

one, which fact must be kept in mind when drawing conclusions. The Smedley dynamometer was used; and the barometric, hygrometric and thermometric readings were taken from the government reports. I began measurements, myself as subject, in the Laboratory of Experimental Pedagogy, New York University, November 13, 1912, and continued until April 1, 1914; then after 180 days rest, measurements were resumed again for 50 days and after an additional rest of 20 days, measurements were resumed for five days,—making in all 560 days upon which tests were taken. Six measurements, three with the right hand and three with the left hand, were taken at each of the seven different stated times, daily as follows: (1) 7 A. M. which was immediately after rising in the morning, (2) 9 A. M., the time between seven and nine being occupied by a bath, breakfast, a short walk and the morning paper, (3) 12 M., the time from nine to twelve each morning being devoted to study or spent in the lecture room, (4) 2 P. M., the time from twelve to two was for lunch, a walk, rest and the reading of a magazine, (5) 6 P. M., the time between two and six was for study or the lecture room (always one or two hours lecture during the University school years 1912-13 and 1913-14), (6) 8 P. M., the time from six to eight being occupied by dinner, rest and the evening paper, (7) 11 P. M., the time from eight being devoted to study. This program was adhered to with a considerable degree of constancy during the entire period during which tests were taken save that during the month of June, 1913, there was no study but tests were taken as on other days. The actual time of taking tests did not vary appreciably from the stated time, and at all such times a note was made of the amount of deviation.

The method of taking measurements was the same throughout the entire period, and for all subjects. At any one time, measurements were taken alternately with the right and left hand, which alternation caused the lapse of a few seconds of time necessary for the changing of the dynamometer from one hand to the other and tended to eliminate fatigue. During the tests the subject stood in an erect position and the dynamometer was held in the following positions: (1) with the arm in a downward position by the side of the body, yet not touching the body at any point, (2) in a vertical position, (3) in a horizontal position. In each of these three positions practically the same muscles are used, yet the fact that the position is different would tend to prevent fatigue. At each measurement an effort was made by the subject to exert all the energy possible, to grip his maximum. Although the dynamometer is intended to measure physical strength only, it is the writer's conviction after a long series of experiments

that the entire individual participates in every separate test taken, and that the results obtained are in a degree a measure of the entire subject.

The data, the summary of which is expressed in my results and from which I have drawn my conclusions, include 28,810 separate measurements.

IV. RESULTS

I. Daily Periodicity

a. General.—By a careful study of the table, given below, of the general daily periodicity for the 505 days from November 13, 1912, to April 1, 1914, showing the arithmetical average, maximum, minimum, mean variation and median, one will note the following general trend in the curve of arithmetical averages: (1) a relative low measurement (43.33 kilos) for the early morning period, due doubtless to the fact that the tests were taken immediately after rising in the morning; (2) a rapid rise at 9 A. M. (46.59 kilos); (3) a slight drop at 12 M. (46.34 kilos); (4) a slight rise at 2 P. M. (46.44 kilos); (5) a broad level from 2 P. M. to 6 P. M. (46.44 kilos); (6) a rise at 8 P. M. (46.63 kilos) making not only the afternoon crest but the high point of the day; (7) a marked *drop* at 11 P. M. (45.26 kilos). This 11 P. M. measurement though indicating a decided drop (1.37 kilos) below the 8 P. M. measurement is higher than the early morning test by 1.93 kilograms. The median curve follows the average curve very closely, being a little higher at all points. The one marked variation is shown in the median measurement for 6 P. M. which is somewhat below the median measurement for 2 P. M. instead of being on a level with it as is the average measurement. The median curve which shows a morning crest at 9 o'clock, an afternoon crest at 2 o'clock and an evening crest at 8 o'clock is probably nearest to the true diurnal course of efficiency. The striking of averages, of a large number of measurements, tends to bring all to a level. This conclusion is strengthened by a consideration of the range of difference between maximum and minimum measurements and the mean variation. The range of difference between maximum and minimum at 12 o'clock is greater than at either 9 o'clock in the morning or 2 o'clock in the afternoon, greater at 6 o'clock than at either 2 o'clock or 8 o'clock and greater at 11 o'clock than at 8 o'clock. It is least at 8 o'clock in the evening (8.1 kilos), second lowest at 2 o'clock in the afternoon (9.3 kilos) and greatest at noon (14 kilos). The curve of mean variation though nearly straight is lowest in the forenoon and early afternoon and highest at noon and in the evening.

The very low measurement and the slight mean variation

for the 7 A. M. period are doubtless due to the fact that the tests were taken immediately after rising in the morning. In order to verify this conclusion tests were taken on 30 days at 7.45 A. M., which was after the necessary exercise required in making the morning toilet but before breakfast, with a resulting average measurement only slightly below the average measurement at 9 A. M. for the same days. The rise at each of the 2 P. M. and 8 P. M. periods is due in part to taking of food and rest. The afternoon is always better than the morning; the average and median being higher, the range of difference between maximum and minimum being less and the mean variation being the same; the evening is better than the afternoon; the average and median being higher, the range of difference between the maximum and minimum being less, while the mean variation is slightly higher.

The diurnal course of efficiency as indicated by the arithmetical averages, median, mean variation and maximum and minimum seems to have three distinct rises and an equal number of declines. This is true not only of the averages but of 69 per cent. of the 505 days included in the table.

Table for the Diurnal Course of Efficiency

	7 a.m.	9 a.m.	12 m.	2 p.m.	6 p.m.	8 p.m.	11 p.m.
<i>Average.</i> . . .	43.33	46.59	46.34	46.44	46.44	46.63	45.26
<i>Max.</i>	49.00	50.60	52.00	50.80	50.80	51.10	50.60
<i>Min.</i>	38.50	39.00	38.00	41.50	40.80	43.00	40.60
<i>Median.</i>	43.80	46.80	46.70	47.10	46.90	47.30	45.90
<i>M. V.</i>	1.50	1.70	1.80	1.70	1.70	1.80	1.80

b. Detailed.—A detailed study of the diurnal course of efficiency of the 505 days included in these tests reveals many interesting facts that are entirely unnoticed by a general consideration of arithmetical averages and mean variations. The day showing the highest average record was October 28, 1913. The record for this given in the regular time order for the seven periods was: 44.5, 50.5, 51.3, 50.1, 50.6, 50.6, 49.1. It will be noticed that the curve of this day is not that of the average day; instead there is a gradual rise until 12 M. when the maximum measurement for the day is made, a drop at 2 P. M. and another rise until 8 P. M. The curve for this day is characteristic of a large number of days upon which the subject was in the best of spirits, or when work was inspiring. Another group of days having a record very similar to the foregoing save that the afternoon record was comparatively low, was when work was interesting and a maximum of attention was given during the entire morning. The curve would gradually rise until 12 M. or perhaps 2 P. M. then drop and remain low for the entire afternoon and evening. The maximum grip, and maximum measurement for any one

period did not occur on either the day having the highest or next highest record, nor during the season when highest records were being made, nor at the time of day having the highest average record. The maximum grip (57 kilos) was made at 12 M. on January 6, 1914, and the highest record for any one single period (52 kilos) was made at 12 M. on January 4, 1913. Both of these records were made on days when work was inspiring, when the subject was at his best.

2. Weekly Periodicity

a. General.—In order to study the weekly periodicity the data for the 53 weeks between December 15, 1912, and December 20, 1913, were considered. From a study of the table given below it will be noted that: (1) the curve of arithmetical averages is nearly straight, (2) the median curve is more marked, (3) the maximum and minimum curves have the same general trend, (4) the difference between maximum and minimum measurements shows Monday and Thursday with the greatest difference and Wednesday and Saturday with the least, (5) Monday shows the highest mean variation and Saturday the least.

Table for Weekly Periodicity

<i>Days</i>	<i>Sun.</i>	<i>Mon.</i>	<i>Tues.</i>	<i>Wed.</i>	<i>Thurs.</i>	<i>Fri.</i>	<i>Sat.</i>
<i>Average. . . .</i>	46.00	45.90	46.30	46.10	45.90	46.00	46.30
<i>Max.</i>	49.10	49.30	49.50	48.90	48.70	49.00	48.90
<i>Min.</i>	42.90	42.00	43.20	43.10	41.50	42.80	43.20
<i>Median. . . .</i>	45.50	46.10	46.60	46.30	46.10	45.80	46.30
<i>M. V.</i>	1.53	1.66	1.43	1.34	1.36	1.53	1.33

b. Detailed.—By a more detailed study of the individual weeks included in the general study of consideration of averages and especially when the subjective notes are taken into account some points of interest are apparent. During the University school year it was found that the weekly curve followed very closely in its rises and falls that of days of most and least study. On Saturdays the most hours were spent in the lecture room. These were not low record days, however, but Fridays which were devoted to preparation for the Saturday lectures. The increased difference between maximum and minimum on Monday and Thursday, mentioned above, was due to a marked drop in the minimum curve for those days, and which is accounted for when the subjective notes made on those days are consulted. On the Monday upon which the low measurement was made, I had written, "No physical exercise to-day or yesterday; close application to work," and on the Thursday upon which the low measurement was taken I had written "Close confinement and intense study for several days." This accounts, in a measure, not

only for the increased deviation between maximum and minimum but for the low arithmetical average.

3. Monthly Periodicity

a. General.—A consideration of the curves for the sixteen months during which tests were taken in the first experiment, no distinctive characteristic common to all or a large percentage of the months is noted. A comparison of the several months reveals the fact that ten of the sixteen months (63 per cent.) have the same diurnal course of efficiency and that the curve for each of the ten months has the same general trend as the average curve for the 505 days included in the experiment. The curves for four of the remaining six months have the same general trend as the average curve and vary from it only in that the crests are at different hours of the day. Thus fourteen or 87 per cent. of sixteen months during which tests were taken have the same general trend, the M shaped curve for their diurnal course of efficiency.

b. Detailed.—For nine of the months the difference between maximum and minimum curves shows a decided decrease at 9 A. M. from that at 7 A. M., for eleven months there is a marked increase in the difference between maximum and minimum at 12 M. over that at 9 A. M., for twelve months there is a marked decrease in this range between maximum and minimum at 2 P. M. from that at 12 M., for eleven months there is an increase in the difference between maximum and minimum at 6 P. M. over that at 2 P. M., for eleven months there is a decrease in this range at 8 P. M. from that at 6 P. M. and at 11 P. M. ten months have an increase in the range of difference between maximum and minimum over that at 8 P. M.

4. Seasonal Periodicity

a. General.—In studying the seasonal periodicity I have considered (1) the curve of daily averages for the entire period of 505 days included in the experiment, (2) the daily mean variations and (3) the diurnal course of efficiency by seasons. From a consideration of the curve of daily averages for the entire period, it is evident that the portion representing the summer and autumn, June 21st to December 22nd, is more regular and at a higher level than the portion representing the winter and spring seasons. The curve for autumn is higher though not more regular than the curve for summer. This is best shown by a consideration and comparison in percentages of the number of days of each season that are below the average for the year. The average daily measurement for the calendar year 1913 was 45.9 kilograms, 68 per cent. of the days of the winter season were below this average,

80 per cent. of the days of the spring season were below this average, 26 per cent. of the days of the summer season and only 4 per cent. of the days of the autumn season were below this average. The beginning of the winter season is quite marked for both the year 1912 and 1913, there being a decided drop in the curve near the middle of December. There is no characteristic change in the curve at the approach of the spring season; the curve during the entire season being only slightly more irregular than the curve for the winter season. Between summer and autumn there seems to be no line of demarcation. If we were to consider the curve as represented by arithmetical averages only, there would be much more reason for dividing the year into three periods as suggested by Malling-Hansen, *i. e.*, from August to the middle of December, from the middle of December to the end of April and from the first of May to the end of July. The general curve becomes very regular about the first of August and continues in this way until the middle of December where there is a decided drop in the curve. From this point on the curve continues at a decidedly lower level and somewhat more irregular to the first of April. Between May 1st and August 1st the curve is slightly more regular than the previous period.

A careful study of the data for the 505 days included in the first experiment brings to light a marked difference in the diurnal course of efficiency as indicated by the mean variation for the different seasons. During the winter season the curve of mean variation on 65 per cent. of the days was that of the letter W, during the spring season 51 per cent. of the days, during the summer season 31 per cent. and during autumn 41 per cent. of the days. The characteristic curve for the summer season was that of the inverted letter U, *i. e.*, there was a gradual rise in the mean variation from the morning period until 2 P. M. or 6 P. M. then a gradual drop to 11 P. M. During spring and autumn the days are nearly evenly divided, and seem to alternate between the two forms. This is not surprising when we remember that spring and autumn are transition seasons between the colder winter and warmer summer. During the summer when the diurnal solar control of climatic conditions is strongest there is a gradual rise in the mean variation of the dynamometric measurements taken at the respective periods of the day up to 2 P. M. or 6 P. M. with a drop to 11 P. M. During the winter when the non-periodic cyclonic element controls the weather the diurnal course of efficiency as expressed by the mean variation of dynamometric measurements is of a very different character. There is a drop at 9 A. M. from that at the early morning

period, a slight rise at noon, a drop in the afternoon and a rise in the evening. This would seem to indicate that during the summer season when climatic conditions are controlled by a periodic diurnal solar element, the subject gradually decreases in his ability to remain constant during the time required for taking the dynamometric measurements, according to previously described methods, as the day advances with the exception of the 11 P. M. period. This deviation may be accounted for by the fact that at this time the subject was fatigued and as will be pointed out later fatigue tends to increase the mean variation up to a certain point, but as fatigue becomes more pronounced the mean variation becomes less, or that the subject had been physically inactive for three hours previous to taking the 11 P. M. tests, and that inactivity lowers both the arithmetical average and mean variation. During the winter season when climatic conditions are controlled by a non-periodic element the subject's ability to remain constant shows effects of work, rest, the taking of food and recreation. That there is a definite causal relation between these two very interesting facts, the change of weather conditions caused by the predominating control of the solar or non-periodic cyclonic element and the mean variation in the dynamometric measurements taken during the different seasons, this investigation does not attempt to prove. Even should this relation be established for one individual far more extensive investigations would be necessary to establish the hypothesis as a law. If it is true, however, that during the winter season the currents of air that come from higher altitudes bringing ozone and a high electrical potential do stimulate man to the extent that he remains more constant at a given time of the day, increases his ability to concentrate as this investigation seems to indicate, it is well worth scientific investigation.

The seasonal variation as indicated by the diurnal course of efficiency for the five seasons studied differs from that of the average only in the location of maximum and minimum points and not as to general trend. In the relative difference between maximum and minimum curves all seasons agree with that of the average curve.

5. Yearly Periodicity

a. General.—In studying the yearly periodicity, I considered (1) the general trend of the daily averages and (2) the diurnal course of efficiency. The data for the first three months of the year 1913, January, February and March, were compared with those of the same three months of 1914. The general trend of the average curves for the two years is very

much the same. The January curve for each year is identical in general trend. For each month there is a rapid rise during the first four days followed by a gradual decline until about five days from the end of the month when there is a comparatively rapid rise, followed by an equivalent drop on the last day of the month. February for each year shows a gradual downward tendency in the direction of the curve. There is a close similarity between the curve of daily averages for March each year. Each curve is comparatively level up to the 21st day where each drops about 1.5 kilograms. From this day on to the end of the month there is a difference, the curve for 1913 continues at a lower level, while the curve for 1914 rises on the 23rd day to a higher point than that before the drop on the 21st day and continues on a higher level to the end of the month. In each case the curve for 1913 is more irregular than the curve for 1914, which is made more manifest by a consideration of the maximum and minimum measurements. For each month and for each period of the day the range of difference between maximum and minimum is greater for 1913 than for 1914. This variation is due in a measure to the fact that when I began acting as a subject my habits became more regular and fixed. An effort was put forth to have regular hours for meals, study and recreation. There was a definite time for rising in the morning and for retiring in the evening. An increased regularity in habits would doubtless bring about an increased regularity of results in the data collected.

A study of the diurnal course of efficiency shows January, 1914, only slightly different from that of 1913. The greatest difference is shown by the deviation between maximum and minimum, also the median curve which differed considerably from the average curve for January, 1914, while the two were nearly coincident for 1913. For February and March, each year, the median curve follows the average curve closely, the marked variation being in the fact that for both months the 1914 curve is considerably above that of 1913. The greatest variation is in the increased rise in the curve from 7 A. M. to 9 A. M. The 7 A. M. measurement for the two years agree within one kilogram, but the rise at 9 A. M. for February, 1913, is 1.9 kilograms while that for February, 1914, is 4 kilograms; the rise at 9 A. M. for March, 1913, is 2.6 kilograms while that for March, 1914, is 5.4 kilograms. There is very little difference in the general trend of the curve from 9 A. M. on to the end of the day save that for 1914 is at a higher level than that for 1913.

b. Detailed.—A study of the general trend of the curves and even a comparison of the diurnal course of efficiency by

months has a tendency to emphasize differences and minimize likenesses. A detailed consideration of the complete records for corresponding days in the light of subjective notes is very suggestive and essential in making a complete comparison. The marked difference between maximum and minimum was due to the slightly more varied or irregular curve for 1913 than 1914. This variation was much more marked for February and March than for January. During the last week of February, 1913, I had written, "It is very difficult to explain this week, unless it is the result of two weeks' close confinement with inadequate exercise." On the week beginning March 16, 1913, I had written, "A sudden rise in vitality, an increased ability to work but a decreased inclination." During the last week in March, 1913, I had written, "An aversion to study; can hold myself to work with difficulty." From the above, it is evident that the maximum of work was being attempted. This explains the wide range between maximum and minimum, and the fact that the average curve for 1913 is lower than for 1914. There was not so much work attempted during 1914 and it was accomplished under more ideal environmental conditions. A consideration of the month of January each year when the amount of work attempted and environmental conditions were similar reveals the following detailed records for the 7 A. M. tests for the first week in January each year:

1913.....	43.5	46.0	43.0	45.5	45.7	45.0	45.0
1914.....	43.6	44.6	43.0	44.6	45.8	45.0	44.5

A very marked resemblance is shown. The object in selecting the morning records is the fact that these are freer from accidental influences that might happen during the day, these tests being taken after a night's rest. Not all the weeks of the two months have so close a resemblance, however. For January, 1913, the maximum measurement was 54 kilograms, the highest daily average 48.9 kilograms, and the lowest daily average 44.5 kilograms. For January, 1914, the maximum measurement was 56 kilograms, the highest daily average 48.2 kilograms and the lowest daily average, 45 kilograms. As has been pointed out the maximum grip (57 kilos) was made at 12 M. January 6, 1914, and the best record for any one single period (52 kilos) was made at 12 M. January 4, 1913.

6. Individual Variations and Correlation of Tests

An opportunity for studying individual variations and correlation of tests was made possible by nine graduate students who kindly consented to act as subjects. One graduate stu-

dent who will be designated as Subject *R*, took tests at 6 P. M. each day from December 12, 1912, to May 26, 1913. The time at which Subject *R* took tests was the same as one of my own periods; further he had similar habits of life and was doing very much the same work at the University. The general trend of the two curves is the same, the curve of Subject *R* being slightly above my own. Each curve shows a slight rise up to the 1st of January and a downward trend through February and March, a slight upward trend in each curve to the 14th of April. From April 17th to May 23rd the curve for Subject *R* took a downward direction while my own curve indicates a rise. This downward trend in the curve of Subject *R* is doubtless due to the fact that during these days preparation was being made for the final examination for the Doctor's degree. On the three following days after the examination the curve makes a very rapid rise.

During the New York University Summer School of 1913 eight graduate students, two ladies and six gentlemen, consented to act as subjects for twenty-four days. Each subject took tests with the Smedley dynamometer, according to the previously described method, at 1 P. M. (the beginning of a lecture period), at 2.30 P. M. (the end of the lecture period proper) and at about 3 P. M. (or just after taking the Lough Association Test which followed the lecture period). Measurements were taken between July 5 and August 5, 1913. No tests were taken on Saturdays or Sundays. A careful consideration of the data reveals the fact that only three subjects show a decrease in their ability to grip the dynamometer on more than 50 per cent. of the days, two show a decrease on more than 50 per cent. of the days while taking the Association tests, four show a drop in the median measurement on more than 50 per cent. of the days during the lecture period, while only two show a similar drop during the time of taking the Association test. Two show an actual decrease in the difference between maximum and minimum on more than 50 per cent. of the days, while only one shows a similar decrease while taking the Association test. A very wide range of percentages, doubtless, indicate very marked individual variations.

7. Fatigue Influences

The marked drop in the curve of Subject *R* from April 17th to May 23rd, previously noted, was due not only to intense application while completing his Doctor's thesis and the accompanying mental strain, but to a lack of out-door exercise. It is interesting to note at this point, that the curve of Subject *R* took a sudden rise during the last five days and actually reached my own curve on the day before the experi-

ment closed though it had been nine kilograms below it on the 10th day of May. During these five days much time was spent in the open; there was no study and no mental strain.

Just how much of this effect was due to mental fatigue and how much to lack of physical exercise cannot be determined by the tests taken by Subject *R*. My own data furnish an opportunity to study this very interesting problem and throw some light upon the effects of both mental fatigue and physical inactivity. During the last week in February, 1913, and the month of March, I was doing the maximum of mental work possible as has been indicated by quotations from subjective notes. These weeks were characterized not only by a low daily average but the range between the right and left hand became much affected. In general my right hand is from 5 to 8 kilograms stronger than the left. It was during this last week in February, 1913, including the first two days of March that the left hand measurement equalled that of the right hand on thirty of the forty-nine periods upon which tests were taken. During the week beginning March 16, 1913, when I had written, "An increased ability to work but a decreased inclination," the left hand measurement equalled that of the right hand on only thirteen of the forty-nine periods.

An additional opportunity for studying the effect of lack of physical exercise is offered by the data for the month of June, 1913. During this month there was no study and very little outdoor exercise. As has been stated the curve for May, 1913, had a general upward trend which continued until the 6th of June, when there was a sudden marked drop which came after five days of inactivity. The curve continued downward until June 16th, when the average measurement of the day was 4.1 kilograms below the yearly average line. Five days of out-door exercise brought the curve up to the average line again on the 21st of June, but the following nine days of inactivity left the curve on the last day of June where it had been on the 16th. During the month of May the range of difference between the right and left hand measurements had become normal, and remained normal during the month of June. This would seem to indicate that physical inactivity produces a gradual decrease in the ability to grip the dynamometer, while mental fatigue produces not only noticeable deviations from the normal from day to day, but very marked fluctuations between the right hand and left hand. In other words, a period of physical inactivity is characterised by sluggishness, life at low ebb, while mental fatigue is accompanied by an inability to remain constant.

To test further the effects of inactivity, and lack of out-

door exercise and physical fatigue the following experiment was devised: (1) tests were taken with the dynamometer according to the previously described method by three subjects, Subject *Z*, a girl twelve years old, Subject *O*, a girl fourteen years old and myself, Subject *K*, (2) Subject *Z* took no outdoor exercise, but read, sketched or sewed, Subjects *O* and *K* spent much time in the open playing tennis or walking, (3) tests were taken at 8, 9, 10 and 11 A. M., at 12 M. and at 2, 3, 4 and 6 P. M. These tests were continued for seven days and from the following table it is noted that:

Subj.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 m.	2 p.m.	3 p.m.	4 p.m.	6 p.m.
<i>Z</i>	15.0	14.9	15.7	15.2	15.0	16.6	15.7	15.2	15.6
<i>O</i>	16.9	18.8	20.0	19.4	18.1	19.1	17.9	18.3	18.3
<i>K</i>	45.8	47.7	47.9	47.2	45.6	46.2	46.4	46.5	46.1

(1) the curves of Subjects *O* and *K* are very much the same, having a high morning maximum and a much less pronounced afternoon crest, (2) the curve of Subject *Z* has a morning and an afternoon maximum, the afternoon being the more pronounced. This would seem to indicate that physical exercise in the open air tends to make the morning hours the better, while during days of inactivity the maximum measurement occurs in the afternoon. In the case of Subject *Z* the 9 A. M. measurement actually drops below the 8 A. M. measurement. This was also true on three different days of June, 1913, in my own regular tests when the 9 A. M. measurement was below the 7 A. M. measurement. It was during this month that little physical exercise was taken and almost all of the time was spent indoors.

An attempt was next made to measure physical fatigue. Two subjects, Subject *S*, a high school boy 17 years old and myself, Subject *K*, used a pulley-weight exerciser to produce physical fatigue. Each subject took six measurements on the dynamometer according to the previously described procedure at three minute intervals, the pulley-weight exerciser being used between times, and finally after ten minutes' rest. Subject *K* used the exerciser for five minutes instead of three on the first period. Both subjects were urged to put forth the maximum amount of energy in using the exerciser. The table given below shows for Subject *S* a slight increase in the dynamometric measurement after the first three minute period, but from this on there is a gradual decrease with the greatest decrease after the ten minutes' rest. It is noted also that the mean variation at this last measurement was small, from which it might be inferred that a small mean variation might be associated with physical fatigue as well as with a normal physical condition or physical vigor. Subject *K* shows signs

of fatigue after using the exerciser five minutes, and also at the end of each of the three minute periods, but after ten minutes' rest the measurement was higher than at the previous period. The records of Subject *K* show an increase in mean variation as fatigue increases up to a certain point then begins to decrease as fatigue becomes more apparent.

<i>Subj. S</i>	0 min.	3 min.	6 min.	9 min.	19 min.	
<i>Average</i>	35.5	37.3	36.6	35.6	33.8	
<i>Mean var.</i>	1.5	1.3	1.4	1.3	1.1	
<i>Subj. K</i>	0 min.	5 min.	8 min.	11 min.	14 min.	24 min.
<i>Average</i>	49.0	47.6	47.8	47.3	45.8	46.6
<i>Mean var.</i>	5.0	5.5	6.1	6.0	5.1	4.8

Both of these experiments seem to confirm the conclusion reached above, that physical fatigue and inactivity produce a gradual decrease of physical strength, while mental fatigue produces a marked fluctuation in strength, or a lack of constancy.

8. Barometric Influences

An attempt was made to study the dynamometric data collected in the light of climatic conditions as indicated by barometric readings. My own data show a maximum at a barometric reading of 30.00 with a gradual decline on either side, but with marked fluctuations at the extremes of the curve. The curve for Subject *R* was similar save that the maximum was at 29.80. The barometric readings were not so high during the time when Subject *R* took dynamometric measurements as the period for Subject *K*. Of the eight graduate students, six show a maximum at 30.10, one at 29.90 and one at 29.80. The fact that six of the subjects agree as to the maximum point is significant, also that it is near the maximum point of Subject *K* whose data include all seasons of the year. Further, it might be added that the measurement for Subject *K* for the same days as those of the graduate students indicated 30.10 as a maximum. These variations would doubtless be less if all seasons were included in the data tabulated for each subject.

The season during which the highest dynamometric measurements were taken by myself was autumn. During this season 70 per cent. of the days had a barometric reading above the normal, 29.98, during spring, which was the low point in the curve, 55 per cent. of the days were above normal. During summer 55 per cent. and during the winter of 1912-13, 60 per cent. and during the winter of 1913-14, 63 per cent. of the days were above normal. This would seem to indicate that the collective influence of a large number of days as

indicated by seasons tended to strengthen the conclusions drawn above.

9. Hygrometric Influences

My own data indicate a maximum measurement upon days when the relative humidity was between 70 and 80 and second highest on days when the relative humidity was between 80 and 90. There was a very marked drop in the measurements for days having a relative humidity below 50. For Subject *R*, the maximum was at 80 and minimum at 30. Three of the graduate students had a maximum between 80 and 90, two above 90 and three between 40 and 50. Regarding the last two mentioned it must be stated that their second highest measurements occurred on days of relative humidity above 90, so that the high record was doubtless influenced by other climatic, physical or psychic elements. For the subjects studied, a relative humidity between 75 and 85 is probably most advantageous. The months August, September and October, months of high dynamometric measurement, had a relative humidity only slightly below 75. These months were characterized by a comparatively constant daily dynamometric measurement.

10. Psychic Influences

Under psychic influences there is no intention of entering into a discussion of the influence of mind over matter or *vice versa*. There were days when pure psychic influences entered, however, *e. g.*, on Saturdays during the University year 1912-13 the 12 M. tests were invariably higher than the 9 A. M. or 2 P. M. tests. The 12 M. tests were the maximum tests for these days. The 12 M. tests on these Saturdays were taken at 12.30 P. M., which might alter the records slightly, but on the other hand the time from 9.15 to 12.30 was spent in the lecture room taking notes. These very high records were influenced, we believe, by the fact that these three hours of lectures were very interesting and inspiring, and also because on these days a large number of students were in attendance at the University and especially the lectures referred to; in other words, my tests were influenced by an inspiring lecturer and by the crowd. Another interesting fact in connection with these Saturday tests was that the 6, 8 and 11 P. M. tests were invariably low. There seemed to be a reaction, or perhaps it might be said that we have about so much energy for each day and if a larger amount is used up during the morning and early afternoon, there will be less for the evening. Again the effect of examinations furnished an opportunity to study psychic influences, and its effect upon

the ability to grip the dynamometer. In case of Subject *R* tests taken immediately after a written examination would be higher than just before the examination. This was especially true when taking the preliminary examination for the Doctorate. These examinations were taken in the evening, the subject writing from 7 P. M. to 10.30 P. M. At 6 P. M. Subject *R*'s tests were normal on both evenings upon which he wrote, while at 11 P. M. the tests were higher than at 6 P. M.; but in both instances at 6 P. M. the next day the tests were much lower. My own experience with the preliminary examinations did not agree with that of Subject *R*. After writing for three hours my dynamometric measurement was lower than before. The psychic influence is heightened by the attitude of the subject towards the mental work. With these two subjects it was entirely so, Subject *R* became somewhat nervous while Subject *K* took them as a matter of course; and the results were in fact an indication of difference of temperament.

11. After One-Hundred-Eighty Days' Rest

The writer was interested in the effect of practice, and especially in determining, if possible, the relation between the effect of practice and that of becoming accustomed to the apparatus used. Consequently after discontinuing the experiment, 180 days' tests were again taken in the same manner and at the same hours of the day as in the original experiment. These tests were continued for 50 days. The following table gives the summary results.

	7 a.m.	9 a.m.	12 m.	2 p.m.	6 p.m.	8 p.m.	11 p.m.
<i>Average.</i> . . .	40.8	43.93	43.92	44.3	43.8	44.7	42.6
<i>Max.</i>	44.5	46.3	46.0	47.5	47.0	47.1	46.6
<i>Min.</i>	39.6	41.3	40.3	40.1	41.5	40.0	39.0
<i>Median.</i> . . .	41.0	44.0	44.0	43.9	43.9	44.6	42.9
<i>M. V.</i>	1.2	1.04	1.22	1.5	1.1	1.15	1.3

As indicated by this table the results for the 50 days confirm the conclusions reached by a study of the 505 days. But on considering the records more in detail, it is noted that the average curve after 180 days' rest began at a higher point than when tests were begun in the very first of the original experiment; and that while there was a gradual rise there was much more uniformity than in the curve at the very beginning. This regularity was more in accord with that of the curve at the close of the original experiment, and was doubtless what might be called an echo of the practice gained during the 505 days. Again during the 505 days, I had become accustomed to the apparatus to an extent that I was

hardly conscious of the dynamometer; I could grip my maximum with perfect ease. This condition was entirely wanting when I began tests again after 180 days' rest. It seemed that I must become accustomed to the apparatus again, though I knew exactly how it should be adjusted, and had a distinct memory as to how it should feel. But it was not until after the twentieth day that I became accustomed to the apparatus, as I had been at the close of the original experiment. During all this time there was a gradual rise in the curve. In one other point the curve after rest differed from the original curve. After about sixteen days' rapid rise in the original curve there was a distinct drop, which continued five or six days. This was entirely lacking in the curve after rest. It does seem that there was an influence of practice, an echo as it were, but the very marked upward trend in the curve at the beginning was doubtless due to the fact that it took several days (at least 20) for the subject to become accustomed to the apparatus. This is especially important when we take into consideration the very great simplicity of the Smedley dynamometer.

12. After Twenty Days' Additional Rest

During the twenty days' additional rest there seemed to be nothing lost. The height of the curve was on a level with that before the rest and there was no noticeable loss in adjustment of the apparatus. The following table gives a summary of the results.

	7 a.m.	9 a.m.	12 m.	2 p.m.	6 p.m.	8 p.m.	11 p.m.
<i>Average.</i> . . .	40.8	43.8	43.4	43.96	43.97	45.0	42.6
<i>Max.</i>	41.8	44.8	44.5	44.5	45.5	46.1	43.6
<i>Min.</i>	39.8	42.8	42.8	43.5	42.8	43.4	41.8
<i>Median.</i> . . .	40.6	43.8	43.2	44.0	43.8	45.2	43.3
<i>M. V.</i>	0.64	0.60	0.55	0.44	0.77	1.07	0.38

13. Comparison of Results with Those of Other Investigators

All previous investigators have found a morning and an afternoon crest in the diurnal course of efficiency; and all have placed emphasis upon the morning crest. That there is a distinct morning and an afternoon elevation in the efficiency curve, my findings affirm; but the maximum is during the afternoon instead of the morning. Regarding seasonal periodicity, Schuyten and Peaks found a crest around December-January. My findings place the maximum measurement for October-November. Schuyten found a decrease in the ability to grip the dynamometer during winter and summer and a rapid rise during spring and autumn. My own data show a decline in power during winter, a gradual rise during spring, which continued through summer, with a maximum

during autumn, a sudden drop at the beginning of winter and a gradual decline which began about the middle of the winter season. Dexter pointed out marked effects of barometric and hygrometric influences. My own investigation shows there is a relation between these climatic factors and the ability to grip the dynamometer, but probably not so important as considered by Dexter. With Schuyten we agree that temperature is an important element and with Lobsien that environmental influences and especially geographical location are important.

14. General Summary and Suggestions

From the data studied and for the individuals acting as subjects we are warranted in concluding: 1 that there is a distinct diurnal course of efficiency, a low morning measurement followed by a distinct rise at 9 A. M., a slight drop at 12 M., a rise at 2 P. M., a slight fall at 6 P. M., a rise at 8 P. M. and a fall at 11 P. M.; 2 that there is no distinct weekly periodicity; 3 that there is no distinct monthly periodicity; 4 that there is a distinct seasonal periodicity, characterized by a maximum during October-November, a gradual decline during winter with a minimum during February-March, a gradual rise during spring, a high level during summer and a slightly higher level during autumn; 5 that there is a tendency for the curve of efficiency of one year to follow the general trend of the previous year; 6 that variations in climatic conditions, expressed in terms of barometric, hygrometric and thermometric records, and environmental conditions cause a variation in the ability of an individual to grip the dynamometer; 7 that physical fatigue or physical inactivity cause a marked decrease in the physical strength; 8 that mental fatigue has an influence that shows characteristics differing from that of physical fatigue; 9 that the very interesting results relating to seasonal periodicity warrant a more extensive investigation of the problem; 10 that the element of practice enters slightly but that the marked rise at the beginning of the curve is due to the subjects becoming accustomed to the apparatus; 11 that there is a need of more investigations on individual cases, more ascertained and established facts in relation to the effects of climatic changes.

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A COMPARATIVE STUDY OF THE CURRICULA OF WELLESLEY, SMITH AND VASSAR COLLEGES

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The significance of the subject matter which forms the material of the course of study, Dewey finds, is to present phases and results of community life of such typical value that it is necessary to insure their continuous transmission (11). If any college were to develop in its curriculum an actual fulfillment of his succinct statement, the increasing number of its matriculations would become of immediate concern.

Particular ideas dominate at different times, and the present trend in this country towards "opportunity and freedom" finds its most essential expression in invention and science. A man or woman not wishing to experience the sensations of a "man without a country" must be able to understand and appreciate the prevailing scientific attitude of the twentieth century. The fundamental tone of our curricula must be scientific; and present collegiate curricula should become scientific interpretations of life's interests.

It is the purpose of this paper to give the results of a practical investigation of the curricula of Wellesley, Smith and Vassar Colleges, and, on the basis of the studies actually elected by the students, to ascertain the direction of the modern college girl's development.

These three important colleges, Wellesley, Smith and Vassar, were selected because of the large number of students enrolled in 1915 (5.28.32). At Wellesley are recorded 1,452 students, as follows: 1,345 undergraduates, 85 non-candidates for degrees and 22 resident candidates for the Master's degree. Smith College has 1,638 students, including 31 graduate students; and Vassar College a total of 1,120 undergraduates.

The geographical location of the three colleges is favorable, relative to both student enrollment and natural scenery. The General Education Board has emphasized the importance of the former. The Board in 1915 (16) found that the majority of students will live within 100 miles of the institution. Of Smith students, 14% came from within 50 miles of the college, 35% from within 100 miles; at Vassar, 9% came from within 50 miles, 42% from within 100 miles. In both colleges 86%

of the enrollment was from territory east of the Mississippi and north of the Ohio.

The natural surroundings of these three institutions are excellent. The beautiful Wellesley campus appears as a miniature New England hill district, well supplied with forest growth, with buildings impressed, and opening on Wellesley's famous lake. Smith College is at Northampton, in pleasant proximity to Mount Holyoke, Massachusetts Agricultural and Amherst Colleges. The campus and town are surrounded by wide New England rural scenery, which offers opportunity for rich appreciation. Vassar College, farther west in the famous region of the Hudson, is suggestive of the small city-beautiful, thoughtfully planned for the welfare of its student community. To be sure the campus paths run straight in contrast with the "Indian paths" of Wellesley, and the campus is quite level. Yet turn from the main plateau and the Vassar lakes with their rolling hills at once occupy the foreground. It is no exaggeration to emphasize the favorable locations of these colleges.

THE FACULTY AND THE DEPARTMENTS

A survey of faculty and departments is a necessary preliminary to the study of a curriculum, and since the most obvious criterion of any faculty is a summary of the ranks and degrees of its members a comparative table has been prepared showing the relative numbers, ranks and degrees of the three faculties under consideration. (See following table.)

At Wellesley approximately one-fourth of the professors hold the degree of Doctor of Philosophy, while at Smith and Vassar 80% of the entire number have this degree. It may be noted especially that at Vassar the remaining twenty professors, with one exception, hold some form of the doctorate. In the three colleges there are but two Doctors of Letters.

The important item with reference to the associate professors and instructors is the increase in the number holding the doctorate. More than half the associate professors of both Wellesley and Smith, and all at Vassar, have the degree of Doctor of Philosophy. Wellesley has no ranking of assistant professor, but the figures for Smith and Vassar show an approximate similarity. In each college, the three divisions of instructors, assistants, and lecturers combined outnumber the professorial faculty in the number of degrees. Superiority of the younger teachers in this respect points to the increasing importance of this degree in securing a position in the larger colleges.

COMPARATIVE TABLE OF FACULTIES: NUMBERS, RANKS AND DEGREES

		Number	L.L. D.	Ph. D.	M. A.	B. A.	Ph. B.	Miscel.	No degree	Number of doctorates
Profs.....	Wellesley..	29	1	7	7	5	...	6	3	11
	Vassar	21	1	15	1	...	...	4	...	20
	Smith.....	35	...	24	4	2	...	3	2	25
Assoc. Profs.....	Wellesley..	32	...	19	7	1	...	5	...	21
	Vassar	8	...	8	...	...	...	...	...	8
	Smith.....	22	...	12	5	1	...	2	2	12
Assist. Profs. ...	Wellesley..	...	...	...	...	...	...	...	...	...
	Vassar	12	...	7	1	2	...	1	1	8
	Smith.....	17	...	6	4	2	...	1	4	6
Instructors.....	Wellesley..	59	...	17	19	6	1	6	10	18
	Vassar	40	...	13	12	8	...	4	3	13
	Smith.....	46	...	11	15	6	...	3	11	11
Assistants.....	Wellesley..	10	...	...	4	3	...	...	3	...
	Vassar	16	...	2	1	9	...	2	2	3
	Smith.....	10	...	...	4	2	...	...	4	...
Lecturers.....	Wellesley..	8	...	3	2	1	...	1	1	4
	Vassar	1	...	1	...	...	...	...	...	1
	Smith.....	1	...	...	...	...	...	...	1	...

In general, of the total faculty of 138 at Wellesley, 39% hold some form of the doctorate; of the faculty of 131 at Smith, 41% hold this degree; while this is true of 54% of the faculty at Vassar. Another matter of comment is the number holding no degree whatever; for at Smith 24, at Wellesley 17, and at Vassar 6 members of the faculties are thus classified. This question resolves itself when from the total of 47, it is found that 19 are in departments of music, 12 in departments of hygiene and 9 in departments of modern languages. The very nature of these courses, which demand practical skill, may require the services of teachers possessing the ability but no degree.

Another interesting point in the college for women is the number of men on the faculty. At Wellesley the percentage of male faculty members is 16%. With one exception, all hold degrees, and one-half possess the doctorate. At Vassar, they constitute 19% of the faculty. With two exceptions, all possess the doctorate. The percentage at Smith reaches 33%. All but five hold some degree, and two-thirds are Doctors of Philosophy. In brief, the percentage at Smith is double that at Wellesley, and wants only a trifle of doubling that at Vassar.

The three colleges may now be considered with respect to their departments. Of these, there are 28 at Wellesley, 24 at Smith and 23 at Vassar. At Wellesley, however, there are three distinct departments of English under the general title

"English," and Mathematics is grouped into the "Pure" and "Applied." Vassar has no separate faculty for Italian and Spanish, so these fall within the department of French. This explanation levels the departments numerically. There are also minor points of interest. At Vassar, for instance, Psychology is a separate department; at Wellesley and Smith it is included under Philosophy. Both Wellesley and Smith possess departments of Education, whereas Vassar has none. On the other hand, Vassar alone has a department of Political Science. The department formerly known as "Elocution" now appears as "Spoken English" at Smith and Vassar and "Reading and Speaking" at Wellesley.

Naturally there are important differences in the number of faculty members in each department. At Wellesley the count ranges from one to twenty-three, at Smith from one to seventeen, at Vassar from one to fifteen. A classification based on the number of instructors shows seven large departments, of which English is the largest and History next. There follow in order the departments of Music, Botany, French, German and Mathematics.

Still more interesting and suggestive of tendencies in departmental preferences is a classification showing the relative sizes of the departments on the basis of the number of courses offered in each. This tabulation shows six prominent departments. English leads, then Latin, German is a close third, while History, French and Greek follow. The preëminence of such departments is a self-evident commentary of the insistence of these colleges upon the so-called cultural or language studies, the greater part of which will probably never function in the student's life, unless in the vaguest way. Such an unfortunate emphasis almost inclines to a belief that women have not the capacity to organize a proper curriculum for themselves. Comparing these results with those from the former classification by number of faculty members, it may be noted that the departments of English, History, French and German appear in both groups. This certainly suggests that much work is done in these subjects.

In order to make this outline-diagnosis of the departments complete, some statement of the total number of courses offered is essential. The results are presented in tabular form, so to be as comprehensible as possible. (See following table.) This tabulation shows a preponderance of year courses over semester courses at Wellesley, an approximate equalization at Smith, and over twice as many semester courses as year courses at Vassar. In all three colleges, the number of 3-hour courses, both year and semester, is most marked. A striking fact is that a total of 80 courses were not offered at Wellesley

during the year 1914-1915; and similarly in 1913-1914, 72 courses were not offered. The figures in this regard at the other two colleges are comparatively small. The grand totals of year-hours offered are 537, 458 and 386 for Smith, Wellesley and Vassar respectively.

DIFFERENTIATION OF COURSES (1914-1915)

	Total number of courses	Total number of year courses	Total number of year 3-hr. courses	Total number of year 2-hr. courses	Total number of year 1-hr. courses	Total number of year 4-hr. courses	Total number of semester courses	Total number of semester 3-hr. courses	Total number of semester 2-hr. courses	Total number of semester 1-hr. courses	Total number of year-hours	Courses not offered	Courses not offered, year 3-hr.	Courses not offered, year 2-hr.	Courses not offered, year 1-hr.	Courses not offered, semester 3-hr.	Courses not offered, semester 2-hr.	Number of hours not designated
Wellesley....	205	157	106	16	34	1	48	44	4	...	458	80	38	3	8	28	...	3
Smith.....	287	164	91	51	22	...	123	54	48	21	537	14	1	4	...	3	5	1
Vassar*	223	69	53	6	8	...	154	111	23	9	386	19	2	1	...	11	5	..

Figures do not include courses in the Department of Hygiene nor courses open only to graduates.

* Counted in with the total number are 13 courses with an indefinite number of hours; for instance, 2 or 3 hours. In each case the lowest number was taken for calculation.

REQUIREMENTS

Previous to the study of the curriculum proper, it is essential to obtain an intelligent perspective of the requirements for degrees. This paper is concerned only with the requirements for the degree of Bachelor of Arts. It should be noted that these colleges are uniform in requiring the normal four-year course for this degree. Both Smith and Vassar require the same number of year-hours (56) for graduation, but Wellesley increases this number by three. Differentiating the total number of year-hours required, Smith and Vassar hold the student responsible for 21 hours of definite requirements; while Wellesley, owing to an additional two hours of Biblical History in the junior year, exacts 23 hours. Smith and Wellesley further require 18 hours of concentration; while Vassar does not. As a result, Vassar students have approximately twice the number of year-hours of free electives as in the other two colleges. To compare clearly the

requirements for each of the four academic years a table has been prepared. (See following table.)

From this perspective definite conclusions may be drawn. There are two methods of distributing the total number of hours required. (a) Wellesley employs a gradation ranging from 16½ in the freshman year down to 12 hours in the senior year. In fact, if Wellesley did not include two hours of Hygiene in this requirement, the figures would be similar to Vassar's with the following exceptions. (1) At Vassar a sophomore may take 15 hours in the first semester and 14 in the second; at Wellesley the requirement is 15 hours for the entire year. (2) Wellesley requires 15 hours in the junior year and Vassar 14 hours. (b) The second method of spreading the required hours consists in complete uniformity throughout the four years. This is employed at Smith. The former gradation system, however, is obviously better adjusted to proportionate increases in intensity of study and interest as the student fulfills the requirements and selects a more or less special field for individual work in the upper years.

REQUIREMENTS DIFFERENTIATED

		Required minimum of hours	Electives	Mathematics	English	History	Modern language	Ancient language	Science	Biblical literature	Philosophy	Hygiene*
Freshman	{ Wellesley....	16½	6	4	2	..	(3)	..	(3)	..	..	1½
Year....	{ Smith.....	14	3	3†	3	..	3	..	..	..	..	..
	{ Vassar.....	15	6	3	3	..	..	3	..	..	..	..
Sophomore	{ Wellesley....	15½	8	..	2	..	..	3	2	..	..	½
Year....	{ Smith.....	14	7	..	3	..	..	3	2	..	..	..
	{ Vassar.....	15 (14)	6	..	..	3	3	..	3	..	..	..
Junior	{ Wellesley....	15	10	..	..	..	..	..	..	2	3	..
Year....	{ Smith.....	14	11	..	..	..	..	..	..	..	3	..
	{ Vassar.....	14	11	..	..	..	..	..	..	..	3	..
Senior	{ Wellesley....	12	12	..	..	..	..	..	..	..	..	..
Year....	{ Smith.....	14	14	..	..	..	..	..	..	..	..	..
	{ Vassar.....	12	12	..	..	..	..	..	..	..	..	..

* Hygiene at Smith and Vassar not counted in number of hours.

† Or its substitute.

Italicized figures denote course to be taken either in freshman or sophomore year.

()—either—or.

In addition are certain requirements not counting toward the degree.

Unit is the year-hour.

Moreover, a student must not only "pass" each course during the four college years, but must also attain a certain grade. At Smith, seven hours in each semester of the first two years and eight hours of the last two, must be above the

passing grade. Wellesley require a ranking of "passed with credit" in eight hours for each semester during the first two years, and in nine hours during the last two. At Vassar "a student must have as many marks above C as below C," and beginning with the class of 1917, one-third of the marks must be above.

The precise number of elective hours in the freshman and sophomore years is difficult to determine. Though there are certain definite requirements such as Mathematics and English, certain subjects, well designated perhaps as "catalog electives," are so hedged with warnings that they become confusing requirements. This is perhaps necessary owing to the lack of uniform entrance requirements. In general, the freshman and sophomore years are practically devoted to passing off requirements.

On the other hand, with the exception of Wellesley, whose number reaches five hours on account of the probably unnecessary two-hour Biblical History requirement, each college requires three hours in the junior year, and none in the senior. Essentially, then, the junior and senior years are given over mainly to concentration and free electives.

Certain observations may be made regarding the studies themselves. Three hours of Mathematics (at Wellesley four hours) are required in the freshman year, though at Smith a course in Argumentation may be substituted. A year's work is required in English at Smith and Vassar, but two years' work in the department at Wellesley. Moreover it is to be noted that at Smith, in addition to this requirement, each student must each year take a course in English; these courses, however, are essentially theme work and do not count toward the degree. Finally, Wellesley requires four hours of Biblical History, Smith two hours, and Vassar none. At Smith and Vassar a year's work in History as well as in Modern Languages is required either in the freshman or sophomore years; also three hours of Greek or Latin in the freshman year. Philosophy is a requirement in all three colleges. For most students, Wellesley requires six hours of science, while each of the two other colleges restricts itself to but three hours. In addition, certain requirements must be met, such as a fixed number of Gymnasium hours, talks on Hygiene, and at Smith, lectures on "the College."

It has been noted that both Wellesley and Smith require eighteen hours of concentration. This is perhaps the most interesting feature of the requirements for it is at once an accepted antidote for excessive "scattering" and the occasion for the focussing of the student's "free electives" to the point of individual inclination. Vassar, as has been stated, has no

such system, but allows far greater freedom for individual inclination, though two restrictions are enforced. (1) "Courses may not be taken in more than five departments in one semester." (2) "Not more than six hours may be taken in one department in any semester, except by special permission of the Faculty."

At Wellesley every candidate for the Bachelor's degree must elect 18 hours of major work. She must complete 9 hours in each of two departments, with at least 6 hours above grade I and 3 hours in grade III. (Grade I signifies an elementary course, grade II the intermediate, and grade III the advanced.) As an alternative, she may complete 12 hours in one department and 6 in a second. The former must include at least 9 hours above grade I and 6 hours in grade III; and the latter must include 3 hours above grade I. One full course of advanced grade must be taken in the senior year. The Wellesley student therefore concentrates more or less in two departments. From statistics of the class of 1915, the average amount of advanced work elected per student in the junior and senior years was found to be nine hours. This is perhaps of interest in connection with the Committee on Economy of Time in Education's recent recommendation that the last two years of college be devoted to specialized professional or graduate work. At Smith, juniors and seniors are required to pursue a "main study" which involves two consecutive 3-hour year-courses in one department, supplemented by four 3-hour year-courses to be taken two in each of the junior and senior years.

A STATISTICAL STUDY OF INDIVIDUAL CURRICULA

The actual courses taken for their degrees by 413 students in ten colleges, were examined in 1909 by Thorndike (24). This study included twenty-two Wellesley women; and his results showed that 55% of this small group spent over half their college course in languages and literature, only 5% in natural science, and but 5% in music and art. Ferry has made a more elaborate investigation of the student hours of instruction in eighteen American colleges for 1911-1912 (13). His figures for Smith, however, are based only on the first semester of the college year. He found that Smith ranked as fifth in the relative amount of work done in the foreign languages, although Wellesley was seventeenth. Moreover, in a grouping of studies including English, History and Philosophy, he found Smith in third place, and Wellesley fourth. In the science division, in contrast, Wellesley ranked as tenth and Smith as seventeenth. These studies corroborate the "popular" assumption that colleges for women graduate a

majority of students who have specialized in their language and literature departments.

To present a more explicit and detailed account of the courses of study patronized by the modern college girl, we have collected the individual curricula for the entire four-year collegiate course of the classes of 1915 at Wellesley and Vassar. At Smith, since the student slips for the first two years were destroyed and no other source was open to us, we were able to obtain such data for only the junior and senior years. Statistics were thus obtained for 261 students at Wellesley, 205 students at Vassar and 287 juniors and seniors at Smith.

For an orientation as to the nature of the specialization in these colleges, these curricula were first classified on the basis of the number of students taking 10% or more of their work in any one of the departmental groupings. The results showed a striking specialization in the English departments, which held 82% at Wellesley and 81% at Vassar. There is a similar high per cent. of concentration in modern languages, involving 76% of the Vassar students and 73% at Wellesley. Concentration to this degree in ancient languages is not marked, being a negative quantity at Wellesley and Smith, although with 17% at Vassar. In the History grouping Vassar leads with a percentage of 79%, while 74% of the Wellesley students similarly specialize. When Economics and Sociology are differentiated from this History grouping, however, it appears that at Vassar the former enjoy an approximately equal amount of concentration as does History. In contrast to this more modern trend, Wellesley students devote practically three times as much intensive work to the study of History as to that of Economics and Sociology combined. This result is emphasized by the fact that History at Wellesley is not a requirement for the degree. A similar condition probably exists at Smith, where the number of students found electing History to this extent is over five times as great as the number electing Economics, in spite of an excellent department, the percentage being only 7%. Finally, it is important to note that nearly two-thirds of the students at Vassar specialize to this extent in Philosophy. A differentiation of this Philosophy grouping, moreover, shows this to be a modern and presumably desirable trend, for the amount of concentration in the science of Psychology is then seen to be five times that in Philosophy proper.

A more important tabulation shows the per cent. of students concentrating to the extent of 20% or over of the entire course in any group. This is a second and more intensive proof of the magnetic power of the English departments, for

51% and 36% of the students at Wellesley and Vassar respectively, and 27% of the juniors and seniors at Smith, concentrate to this extent. More than half the students of Wellesley and more than one-third the students of Vassar spend one-fifth their entire course in English. In all three colleges modern languages still hold their own, though to a less extent than English, for 27% and 26% of the students at Vassar and Wellesley respectively, and 9% of the juniors and seniors at Smith, concentrate in them to this extent. Little specialization of this extent is found in the sciences, although in general Wellesley here holds the highest rank. Thus at Wellesley, 11% are specialized to this extent in Astronomy, Geology, and Botany, 2% in Zoology, and 2% in Physics and Chemistry; at Vassar but 3% specialize to this extent in Physics and Chemistry; while but 2% of the Smith juniors and seniors so concentrate in Physics and Chemistry, and but 1% in the Astronomy, Geology and Botany group. The lack of emphasis of these colleges upon the sciences therefore, is out of all proportion to the present importance of these branches of study.

Thorndike, it will be remembered, found a specialization of over half of the entire course in the language and literature groups, among 55% of 22 Wellesley students. This small group alone is of course inadequate for statistical treatment, and his results are accordingly far larger than those obtained by us on the basis of 261 Wellesley students. We found 16% of Wellesley girls spending over half their course in the language and literature groups. Even greater need of improvement in this respect was found at Vassar and Smith, for 25% of Vassar students so concentrated, and 31% of the Smith juniors and seniors. It is significant perhaps that at Vassar, lacking a system of concentration, this emphasis should still be appreciably greater than at Wellesley.

"Scattering" exists, using Thorndike's basis, when a student fails to give at least one-fifth of the total degree requirement to any one of the subject groups. These groups, parenthetically, are Ancient Languages, Modern Languages, English, Philosophy (including Psychology), History (including Sociology and Economics), Physics and Chemistry, Zoology, other sciences, Mathematics, Music and Art, Hygiene, Biblical History, and Education. With this criterion Thorndike found negative results at Wellesley. Similarly, we found scattering in the curricula of but 3% of Wellesley students, and among only 1% at Smith. At Vassar, on the other hand, the percentage of scattering rises to 12%, though this is low for a college having no system of concentration.

Turning now specifically to freshman "electives," a sta-

tistical statement readily shows their limitations. At Wellesley 56% elected German, at Vassar, 39%; while at Vassar 64% elected French, and 53% at Wellesley. Whereas 51% of Vassar freshmen elected History, but 21% did so at Wellesley. Attention should also be called to the fact that 27% of Wellesley freshmen commenced English in the freshman year, in addition to the requirement. There is no such early specialization in this department at Vassar. At Wellesley, moreover, 44% of the freshmen elected Botany to carry out the science requirement; while 26% of the Vassar students filled their science requirement in Chemistry, and 13% in Physics.

It is also of interest to note in passing that the electives of Phi Beta Kappa students confirm the results already obtained. From a total of 73 Phi Beta Kappa students from the three colleges, the largest number of year-hours was in the department of English. In the order of decreasing numerical importance follow History, Mathematics, German and French.

Accepting as a fact then, from the studies by Thorndike and Ferry and our own data, that the election of a large per cent. of the courses in these colleges centers in the departments of English, History, German and French, particular attention may now be given to a detailed study of other departments of perhaps essentially greater import. Such departments are, in our judgment, those of modern Psychology, Education, Economics and Sociology, and the biological and natural sciences.

With the exception of Vassar, the work done in Psychology is confounded with Philosophy. At Wellesley three hours of "Philosophy" are required in the junior year, with an option of one semester of Introduction to Philosophy or a year in Experimental Psychology. Such a course in Philosophy should be of real value, for the introduction is given by Miss Calkins and is followed by a course aiming to discuss "the philosophical problems raised in the study of Psychology." From the total of 261 students, 153 elected this course, while 108 took the Experimental Psychology. However, only fourteen additional courses were taken in Psychology: of the 261 students, but 2 elected two 3-hour courses in Psychological Research and only 10 one 3-hour course in the same subject. Instead, the philosophical side was emphasized and 113 additional courses taken in that subject. Most popular was a 1-hour course in Social Ethics, aiming to develop a "comprehensive conception of human life," and following in order of importance were Modern Philosophy, Logic, and Greek Philosophy, elected by 42, 34, 17 and 14 students respectively.

Smith also has a 3-hour philosophical requirement in the junior year, with a similar option of either one semester of Psychology or one semester of Introduction to Philosophy, in connection with a semester's work in Logic. If this requirement in Logic adequately brings before the student "the methods of science," it should be of value. In addition to the requirement, however, only 30% (85) of the entire number continued work in either of the two subjects. In order, Greek Philosophy, Modern Philosophy, and Ethics were elected by 37, 29 and 15 students respectively. Further, 19 of the students took one year of Advanced General and 15 one year of Advanced Special Psychology. In all, 86 additional courses were elected in Philosophy, and but 47 in Psychology. In this result, as at Wellesley, the emphasis is on Philosophy; although the Wellesley emphasis in proportion, is nearly five times as great.

At Vassar the requirement in Philosophy offers no option, and consists in a semester's Introduction to Philosophy and a semester's Ethics. The latter after 1914-1915 ceases to be a requirement. Having completed the requirement, only 29 of the students elected any further course in Philosophy. Of the two departments at Vassar, that of Psychology is of primary interest. In fact, 89% or all but 23 of the class of 1915 elected some course in this department. Of these, 181 elected a semester of Introductory Psychology. The next course to be most frequently elected was Social Psychology, selected by 94 students, which is 52% of the total. This is an admirable illustration of students becoming acquainted with the fundamentals of a science and then desiring advanced work in the subject along lines involving "something human." This course, indeed, suggests an excellent opportunity for correlation with sociological work. Next in importance are Introductory Laboratory Psychology, Genetic Psychology, and Applied Psychology, elected respectively by 46, 33 and 27 of these students. The emphasis placed by Vassar upon this department should be carefully noted.

From this intensive study of the departments of Philosophy and Psychology in these colleges, certain conclusions may be drawn. I. *Philosophy*. First, exclusive of the requirements, the total number of courses elected in Philosophy at Wellesley, Smith and Vassar are 113, 86 and 34 in the order of enumeration. That is, the figure at Wellesley approximates that of Smith and Vassar combined. Second, the courses of largest relative importance are those in Modern Philosophy. This would tend to indicate what the modern girl desires in Philosophy, namely, something of present-day value and which may be correlated with other findings in the different realms

of science. II. *Psychology*. The differentiation of Psychology from Philosophy reveals startling differences in the number of courses elected at the three colleges. At Wellesley only 16 courses were taken beyond the requirement, 47 at Smith and 403 at Vassar. In short, the number of courses taken at Vassar is over six times as large as that taken at both Smith and Wellesley combined. At Wellesley the few students continuing emphasized the research courses; at Smith emphasis shifted between advanced general and advanced special Psychology. At Vassar the students turn first toward Social Psychology and second, to practically one-half the extent, become acquainted with introductory laboratory work. Psychology is a most pertinent science, and every college student should receive at least an "introduction."

The Economics department at Wellesley offered eight courses for the year 1914-1915, and of these the only ones which touch upon Sociology are two semester courses in Social Economics "open to seniors and by special permission to juniors." This presents a somewhat anomalous situation as regards Sociology. Even when the single course in Introductory Sociology was offered the preceding year, it was elected by none of the students. Probably the essential cause for this neglect of an important science is the preliminary requirement of two courses in Economics. Comparatively, therefore, Wellesley ranks below the other colleges in Sociology. Elements of Economics is a requisite for the election of further courses in the department, and was taken by 92 of the students for the year and by 2 for one semester. Semester courses in Immigration and in the History of Economic Theory were elected by 52 and 51 respectively, this being a favorite combination. The course in Social Economics ranks third with 30 students; this is a trifle less than one-third the total number of students registered in this department, and suggests that additional courses sociological in nature should meet a ready response.

Similarly with Wellesley, Vassar also emphasizes the economic rather than the sociological. The closest approach to Sociology is the course in Charities and Corrections, elected by 70 of the students. Exclusive of the Introduction to Economics elected by 132 of the students, and those affected by the elective stimulus of "Socialism," this is the course best supported. This would rather imply that courses such as General Sociology, Social Institutions and Problems, would also prove a valuable asset to this curriculum.

The high relative standing of Smith should be carefully noted, with reference to the number of courses elected in Economics and Sociology. Sixteen semester courses are of-

ferred and though open only to juniors and seniors, not one was favored with less than 8 students. In sharp contrast to Wellesley, the course in Introductory Sociology is elective irrespective of previous courses taken in the department, and glancing at the electives we find that 145 students elected this course. With the exception of 5, all elected a second semester's work in Social Pathology. On the other hand, but 31 of the students selected the semester of Principles of Economics. This indicates in a marked way that given an equal choice between Economics and Sociology, the student tends to elect the latter. Courses next in order of popularity were Recent Economic Changes, Socialism and Social Reform and History of Social Theories.

In conclusion, the percentages of students studied who elected some course in these departments are a total of 56% at Wellesley, of 68% at Vassar and of 85% at Smith. It is also evident that, with the exception of Smith College, the department of Economics and Sociology implies an Economics department plus a slight sprinkling suggestive of Sociology. During the year 1914-1915, Smith was the only college offering even an introductory course in Sociology. Of the twenty-four titles of the courses offered in these colleges, eighteen are economic, three with sociological bearings, and only three distinctly sociological. The fact must be seriously considered, that just as Biology is important as the science of life, so Sociology, the science of human inter-related life, should be of equal or even greater value, and deserves an emphasis before the student at least equal to the special social science of Economics.

While considering the social sciences, an added topic of interest is to be found in the Political Science department, which Vassar alone has differentiated. This is a new department, commencing in 1913 with one professor and four semester courses. In 1914 two courses were added, a year course in Modern Government and a semester course in Constitutional Law. In 1916 there will be six lectures on law given at the college. The class of 1915 was the first to elect courses in this department, and their response would tend to show the value of just such courses to the modern woman with a vital interest in modern government. A total of 50 of the students, or 24%, selected at least one course. The larger number elected Diplomacy, chiefly "a study of American diplomacy," International Law, Jurisprudence and Modern Governments. Excepting The Theory of the State, everything offered was sampled. These facts are significant for they suggest the active interest of nearly one-fourth the Vassar students in political science.

In comparison with departments already discussed, the departments of Education receive a very minor emphasis. At Wellesley but three such courses are open to undergraduates. Of the 127 students studied who elect work in the department, all but 5 stop after a year's course. More definitely, 116 students elected the Introductory Course in Education for one year, 11 for only one semester, and only 5 of these students elect the advanced course of Problems in Education. In brief, just 49% of the class of 1915 received any instruction in Education.

The relative number of students electing Education at Smith is still less, being 34% of those studied. Of these, 6 elected in the junior year and 92 in the senior. All selected one 3-hour year course in the Principles and Problems of Contemporary Education, with the exception of 15, 13 of whom elected but one semester and 2 a maximum of four and one-half hours.

The only course in Education offered at Vassar is included under the department of Philosophy. This is a 3-hour semester course in the History and Principles of Education, and elected by 20% of the students in the class of 1915. In comparison with the widespread importance of educational subjects both in their general and vocational phases, these provisions would seem very inadequate.

In order to comprehend in full the present hopeful rise of the sciences in these Arts Colleges, a completer survey than simply the psychological and sociological sciences is necessary. From a comparative standpoint, with regard to the science departments of Chemistry, Physics, Zoology, Botany, Geology and Astronomy, Vassar, proportionately with her class of 205, leads with a total of 501 courses elected in these departments; while the 261 Wellesley students are a close second with 542; and 215 such courses are elected by the 287 juniors and seniors at Smith.

The largest amount of work is taken in the department of Zoology, by 55% at Vassar, 47% at Wellesley, and by 27% of Smith juniors and seniors. The department of Chemistry is second, with 78% at Vassar, including the requirement, with 26% at Wellesley, and with 11% of Smith juniors and seniors. Botany is third, with 62% at Wellesley, including the requirement, with 10% at Vassar, and with 16% of Smith juniors and seniors. Then follows Geology, with 40% at Vassar, 26% at Wellesley, and 11% of Smith juniors and seniors; Physics, with 39% at Vassar, including the requirement, with 19% at Wellesley, and 2% of Smith juniors and seniors; Astronomy, with 26% at Wellesley, 21% at Vassar, and 7% of Smith upper-classmen.

Two general results are obtained by this review of these sciences: (1) There seem to be fewer advanced electives in those departments where the student fills her science requirement; as, for example, at Vassar, where only 15% of the students continued their work in Physics and only 20% in Chemistry in contrast with the 40% electing work in Geology, or the 55% in Zoology. (2) At both Wellesley and Vassar, with the exception of the Vassar department of Botany, 52 of the students form the lowest total in any one of the six science departments considered, while seven of these departments have an enrollment of over 80 students. This would seem to denote a distinct rise in the importance of the sciences at these colleges, though the amount of science work is still surprisingly small.

Contrasted with the rise of the sciences is the decline of the classics. At present both Smith and Vassar still require three hours of Greek or Latin for graduation, though a tabulation of the percentages of students who actually continue the study of Latin and Greek presents results relatively insignificant. The elections at Wellesley and Vassar are surprisingly similar. At Wellesley 10% and at Vassar 9% of the students elected Greek; at Wellesley 23% and at Vassar 24% of the students elected Latin.

Another subject open to controversy is that of instruction in Biblical History, for Wellesley requires four hours of Biblical History, two in the sophomore year and two in the junior year. This requirement may be filled by taking four, five or six hours in the department, according to the course taken. The fact that but 7% of the students continued work in this department, would itself seem to question the necessity for such a requirement.

Smith also has a two-hour requirement in the sophomore year; and while a tabulation shows that 24% of the students elected advanced courses, one-half were for only one and one-half hours. About one-third of this 24%, moreover, did work in Comparative Religion. The requirement is one of three courses in Biblical Introduction, two of three hours and one of two hours; while a course in Greek Testament may be substituted for the second semester; this is apparently more liberal than the Wellesley requirement.

At Vassar, representative of no requirement, 21% of the students worked in the department of Biblical History, the courses preferred being *The Life of Christ*, *The Apostolic Age* and *The History of Religions*.

The statement is not infrequently made, with no attempt at scientific proof, that a girl goes to college for the supposed "general culture" obtainable from study in language, literature and music. It has already been shown that there is an

over-emphasis at these colleges upon language and literature at the expense of valuable work in science. No such charge, however, is leveled against the large and important departments of Music of these three colleges. According to G. Stanley Hall, there is no subject in the college curriculum that should be taken by so large a proportion of students, one of the important reasons being that "music is the language of the feelings, sentiments and emotions" which "constitute three-fourths of life" (17). The excellent opportunities offered by these colleges for a musical education should be carefully noted. Not only are appreciative and theoretical courses emphasized, where no previous technical knowledge is required, but also the practical, so that in some way all students may be able to respond.

The Wellesley department of Music offers nine courses in musical theory and, according to the departmental statement, these "are open to all students without regard to previous musical knowledge." In addition, practical instruction is given in pianoforte, organ, violin and singing. Unless the practical work is in Interpretation, Applied Harmony, Applied Form or Applied Counterpoint the hours do not count towards a degree. Any student who desires her Bachelor's degree in four years may take practical work provided she has first obtained the permission of the Dean of the College. Any student who intends to spend five years in her college course, if she elects each year certain courses in the department, may also receive the certificate of the Music Department in addition to her degree. In the class of 1915 36% of the students took 548 hours in the department, amounting to an average of 5.7 hours per student. In addition, 16% of the students studied took practical work.

Smith also has an important department of Music, which includes twelve courses, as well as practical instruction in pianoforte, organ, violin, violoncello, voice and ensemble. If the student has passed the required examinations, "practical work may be counted within the minimum of hours provided it is sufficiently advanced in character." Not more than two hours, however, may be so counted, and this "must be accompanied by theoretical work for one year." Of the juniors and seniors, 31% elected both practical and theoretical courses, while 21 confined themselves to theory. The General History of Music and Musicians was the most favored course, while in the practical work the larger number specialized in pianoforte and voice.

Vassar's department presents a series of ten courses all of which are in sequence, with the exception of three courses in Appreciation. Investigation shows that the latter type of course is favored, since, of the 35% (72) who elected work

in the department, 44 selected the course on Bach, Beethoven and Wagner and 37 the Historical Development of Music. Elementary Harmony was elected by 28 and Interpretation by 13 of these students. In addition, there is instruction in "pianoforte, organ and violin playing and in solo singing, but this work does not count toward the degree." The percentages for all three colleges are remarkably similar, and though small, are significant as representing the development in 238 students of an aesthetic appreciation of the world's music, which should function through life.

In order to complete a well-rounded survey of these present curricula, attention must also be focused upon the very practical departments of Hygiene, a present-day study which presumably should receive special stress. In the departments of all three colleges, each student is carefully examined on entrance by the college physician, and sufficient data secured to prescribe the proper amount and nature of exercise. The fact that a certain amount of corrective exercise is required of students with slight abnormalities, in itself shows that the department aims to study the individual and follow up with the necessary steps to build a well-rounded physical development. Moreover, as typified by Wellesley, Vassar and Smith, the modern Hygiene department does not confine itself to set mechanical drills but offers the students instruction in games, folk-dancing, aesthetic dancing and in a great variety of outdoor sports.

Wellesley has sufficient instructors and courses in the Hygiene department to provide efficient instruction. Freshmen and sophomores are required to take two practical periods of gymnasium work each week, while every freshman must attend a lecture on Hygiene once a week through the year. In this course, to quote, "Stress is laid (1) on the applicability of hygienic practice in the immediate situations of college life, and (2) on the development of habits of posture and movement as a phase of education. The underlying physiology is reduced to the least amount needed for scientific justification of the practice of personal hygiene." This would seem to be a good introduction, and one which might stimulate to the election of courses in Physiology. Yet with two courses of Physiology and Anatomy in the department of Zoology, the former was elected by just 7, the latter by only 1 of the class of 1915. If a student plans to spend five years for her Bachelor's degree, she may at the same time obtain the certificate of the department of Hygiene, as a teacher of Hygiene.

Smith College has fewer instructors but more courses in Hygiene than Wellesley, there being eight instructors to Wellesley's twelve, and fourteen courses to Wellesley's ten.

Every under-classman is required to take four hours of practical gymnastics, including one period of folk dancing for freshmen and one period of aesthetic gymnastics for sophomores. In addition, at least six Hygiene lectures on "the relation of personal conduct to health and efficiency" are required of freshmen, and of seniors a course of five or six lectures in special Physiology and Hygiene.

The Vassar department of Physiology and Hygiene, with two instructors, requires three hours of practical gymnastics of all freshmen and sophomores. Freshmen must also attend six lectures upon "personal conduct as affecting health," including a discussion of "dress, exercise, bathing, food, work, rest." Such lectures, whether given at Vassar, Smith or Wellesley, might conceivably become mere articulations of what one must or must not do; but if the statements made are proved by straight experimental evidence in clear and simple form, the students might also come to realize the importance of "scientific" fact. Though the Vassar department is limited to two courses, both appear valuable. The course in Advanced Human Physiology was selected by 21 students of the class of 1915, while the other, a semester course in Municipal and House Sanitation, was elected by 72 students. These three departments of Hygiene thus present important features which entitle them to a high standing in the college curriculum.

THE VOCATIONAL IN THE CURRICULUM

At present it is a controversial matter whether or not the College of Arts should offer definite vocational training. Wellesley has two departments in which, owing to advanced certificate work, this vocational motive plays a particularly evident rôle. Although these special courses are not an intrinsic part of the collegiate work, they must exert an influence.

The Hygiene department offers its certificate for a special two-year course. To quote, "this course is especially designed for the training of teachers of Hygiene. Candidates must meet the requirements prescribed for admission to the freshman class, including Chemistry or Physics, and must be without organic disease or serious functional disorder. A keen sense of rhythm is necessary." A total of eighteen courses, both theoretical and practical, was offered in 1914-1915.

The department of Music also offers a special certificate. The important relation of the undergraduates to this department has been previously noted. On the other hand, those students not registered for the degree of Bachelor of Arts but who wish to obtain the department's certificate must meet the requirements of the freshman class, must be grounded in

the fundamentals of the work chosen, and, in addition to several regulations, "must also take from six to nine hours per week of academic work, including Musical Theory." In general a period of four years is necessary to complete the course.

At Smith and Vassar no special certificates are given in the departments of Hygiene and Music, yet ample opportunity is afforded in practical as well as in theoretical work. In fact the Music departments of all three colleges are small conservatories of Music, efficiently directed and offering the student both individual and ensemble training. Similarly the departments of Art seek to offer practical work, Smith allowing four 6-hour courses, with 2-hours of credit; and Wellesley four 1-hour courses in studio practice.

All three colleges, moreover, possess scattered courses of a practical nature, which if properly applied to the student's "special interest" have a direct vocational bearing. Evidently if a student plans to do her future work in applied science, her advanced laboratory courses may well be termed "vocational."

Any vocational emphasis which exists at Wellesley in the department of Education, however, is chiefly in graduate courses. These include a course in secondary and two in kindergarten education, on completion of which the student is "amply qualified to conduct kindergartens." The collegiate work has already been discussed. Excepting "Principles and Problems of Religious Education," the only advanced educational course at Wellesley is Problems in Education, elected by but 5 members of the class of 1915. At Smith, however, the two-semester course on Principles and Problems of Contemporary Education, affords opportunity for school visiting and was taken by approximately one-third the juniors and seniors.

As illustrative of vocational tendencies in the English department, Vassar plans, in 1915-1916, a course in critical writing with more than usual emphasis on the journalistic side because the instructor has been engaged in newspaper work.

The department of Spoken English at Smith and Vassar and of Reading and Speaking at Wellesley may perhaps be considered as having vocational value. For, as noted by the Wellesley College News, this department has changed from the cultivation of an "artificial manner and a store of parlor tricks" to practical study and appreciation of the art of speaking and reading; and both the voice and body are trained. At Smith and Vassar extemporaneous speaking is emphasized, and Vassar gives special attention to "story-telling."

The beginnings of a training in social service are exemplified at Smith, where Sociology ranks equally with Economics,

by the courses in Charities and Corrections and Present Social Problems; and at Vassar by the course in Charities and Corrections.

With reference to the Botany department too, some may be surprised to learn that at Smith 24 juniors and seniors elected a course in Horticulture and 9 the course in Landscape Gardening, both clearly suggestive of the vocational, while Vassar, in 1916-1917, offers a 3-hour advanced course in Botany in which landscape gardening will be taken up. In another field, the Wellesley department offers a 1-hour course on Bacteria, Yeasts and Moulds in the Home. The Smith department goes so far in its announcement of courses as to advise regarding those essential to vocational training.

Certain courses in Chemistry similarly have vocational applications: the course at Wellesley, for instance, on Air, Water and Food Analysis, though this was taken by only 5 students in the class of 1915. Smith offers Sanitary Chemistry and Lectures on the application of chemical facts and principles to common life. Vassar offers Physiological Chemistry, Food Analysis and Applications of Chemistry to Food and Sanitation. The latter course is "designed to give a basis for intelligent consideration of the chemical aspect of problems involved in public and private Hygiene. Especially valuable for those interested in Sociology and wishing to equip themselves for public service." Each of these courses was elected by 10 members of the class of 1915. Courses in Physiology have already been emphasized in connection with the student's curricula.

Vocational training for a career in the home receives a very slight and scattered emphasis. Andrews in his recent study of approximately 450 colleges and universities in the United States which receive women students, found 257, or 57% giving, or soon to be giving, courses of instruction in home economics (1). His classification of courses bearing on preparation for the home, however, is very broad, and includes such subjects as music, education and sociology. Andrews mentions, for example, three courses at Wellesley, the two semester courses in Social Economics and the one in Economics of Consumption. Despite the statement accompanying the latter course that "the function of women in directing household expenditures will be considered throughout," these courses were selected by only 18% of the students electing work in the department according to statistics of the class of 1915. The suggestion of Andrews that a department of Household Administration be established should be seriously considered by our women's Colleges of Arts. More adequate preparation might thus be given those students who almost

immediately devote themselves to the "domestic" vocation, after their four years at college.

Thus far the larger Colleges of Arts for women emphasize the vocational motive only in so far as several special departments and several applied courses offer bases for later professional work, with here and there perhaps a hint of home training. And while these applied courses are elected by small percentages of the students, these per cents. should increase as the student herself develops and is able to appreciate vocational opportunities which will function in real life.

It should be advantageous to these institutions to examine carefully, with a view to partial incorporation if feasible, the curricula of such a college as Simmons with her four-year programmes in Household Economics, Secretarial Studies, Library Science, General Science, Social Work and Industrial Teaching. As early as 1910, a Committee of the New York Branch of the Association of Collegiate Alumnae recommended that "the curriculum of women's colleges be modified in the direction of vocations by the introduction of required courses in Hygiene, Biology, and Bacteriology, and applied Sociology—legislation, property, social and domestic relations from the point of view of women's interests; and that further elective courses in physical and psychological Hygiene of childhood and in Political Science be provided." This admirable statement does not imply a revolution, but simply the addition or substitution of important applied courses, which, correlated to theory, will give to one type of student the scientific education necessary for home technique and to others the working basis for whatever technical work they may later pursue as a vocation.

THE ELECTION OF COURSES

The important vocations open to women are readily tabulated, and some understanding reached regarding what collegiate courses a student should follow in preparation for her vocation. The momentous question which the modern college must face is: does the student know what she wants to elect, and if not, how is she to find out? Faculty and curriculum are available, but it is doubtful whether adequate "aids" are given students in their selection of courses.

There are several existent methods for assisting the student to elect. The system of faculty advisers is in general use. At Wellesley and Vassar each freshman is assigned to a faculty member, acting as her adviser during the college year. At Smith the students are advised in connection with the "course of study," but "while all possible aid and direction will be given by the Class Officers, the students will be held

responsible for errors in their choice of studies." The Class Officers constitute a board of ten members, the dean as chairman, a faculty member for advanced standing and two faculty members for each college class. According to President Burton, "it is absolutely essential to real education that every student know some teacher and that every instructor come in contact with his students." But the method of faculty advisers is efficient only when there is a clear comprehension of its purpose by both sides.

Upper-class students are also utilized as freshmen advisers. At Wellesley nearly all freshmen are lodged in the Village, and a group of seniors termed "Village Seniors" sacrifice their homes on the campus to live in the Village and offer any assistance they may require. This system is under the control of the Student Government Association. Beginning in September, 1915, a total of 100 freshmen advisers will be chosen from the two upper classes at Smith College. This latter method may offer the same difficulty as with faculty advisers, in that a freshman may become aware of the fact that somebody else has an adviser and that she also is "supposed to have." Both systems largely depend on the attitudes of the individuals concerned, a very variable factor.

There are other evidences of the beginnings of an adequate vocational guidance in the student's electives. At Vassar the "Department of Wardens" promises to take the lead in initiating vocational motives. The Wardens are dormitory officials and, with the Head Warden, form the department of Wardens. To quote the bulletin, "nothing that concerns the student is foreign to them (the wardens) and they keep in view the need of intellectual inspiration as well as the awakening of a social moral spirit." Vassar hopes that this department will remedy the "just complaints" for the "neglect of the individual;" and at present this department is formulating a vocational plan. Meanwhile the Student Government Executive Board has taken a census to find in what particular subjects the students are interested, has classified the results, and grouped the students with regard to the discussion of subjects of mutual interest. This in itself is important and is one of many proofs of the responsibility which the Students' Association may assume.

The plan of a definite vocational adviser is certainly an innovation in colleges for women, but the system should expand and become a dominant force in student guidance. The vocational counsellor is defined by Williams as "the newest official in the college world for determining in what way the college stands in need of improvement as a developer of abilities, interests and viewpoints required for the meeting of the

needs of the world" (31). Possibly one of the factors in this expansion should be sub-student committees receiving special vocational instruction, for there is nothing pertaining to the student body which does not receive its best stimulus through "popular" expression, occasioned through a group of students recognized as influential in the college community.

The vocational adviser for Wellesley, Smith and Mount Holyoke is Miss Florence Jackson, director of the Department of Vocational Advice and Appointment of the Women's Educational and Industrial Union in Boston. This method includes a certain number of meetings arranged to give talks to students concerning different vocations. Such talks are not necessarily given by Miss Jackson, but through her, by persons representing various vocations. Thus an item of the *Wellesley College News*, March fourth, reads "Vocational guidance meeting on Tuesday, March 9. The subject will be 'Secretarial Work,' and one of the speakers will be Miss Marguerite Kimball, secretary to Bishop Lawrence." This is a wise policy as one of the requisites of good vocational advice is an intimate knowledge of the vocations. Individual problems are attended to, moreover, by reserving several hours after each talk for consultations between speaker and students, while definite office hours are held by Miss Jackson.

At some later date this plan may be supplemented by careful vocational guidance in the high school. Davis, in his recent study of the Grand Rapids plan, asserts "that during the last year of a student's high-school experience his attention should be directed along sociological lines from the viewpoint of his chosen vocation" (10). He further shows to what an extent the vocational may naturally function in the daily curriculum. Collegiate English departments, for example, might well apply to "freshman themes" the systematic vocational guidance so carefully worked into the English compositions of the secondary school by this Grand Rapids plan. Nor is English Composition the only department which may thus be vitalized.

The most essential need is some means of presenting to all students all collegiate values. The freshman should be in receptive "mood" for such advice, for she has entered a radically new environment and must undergo a process of adjustment until she is able to view her electives from the perspective of both past and future knowledge-accumulations. Too often, in the case of freshmen and more advanced students, one notes "the line of least resistance," or the election of "studies" minus the thought of "study," or the pursuit of studies "for which nature endowed them with rather meager or no capacity." The modern college laments "a general lack

of information and considerable positive misunderstanding on the part of the students of the entering class respecting administrative, social and academic matters, and this defect attributes to the failure of many students to appreciate and profit by the college course."

The freshman year is devoted almost exclusively to definite requirements, such as English, Mathematics, Latin, modern languages, and becomes essentially the continuation and rounding off of high-school subjects. For this reason the student at the end of the freshman year remains unacquainted with the "elective" curriculum, and, lacking this intelligent basis, is hardly more capable of wise elections than she was upon college entrance. It is practical and efficient, as Ewer suggests, to afford her "preliminary glimpses of fields which the student does not ordinarily reach in her first year, particularly Philosophy, Psychology, Education and Sociology." Such glimpses should lead each student to new interests. These interests might be "experimented" with in sophomore electives. In sequence, when specialization as an upper-classman arrives and "man seems to pass over from being a mere knowing animal into a thinking being," more students would have a definite idea of where to "major."

Among the most successful experiments with this problem is the course in "College Life" developed by Ewer at Reed College (12). This practical freshman course includes "the development of higher education," "the meaning of education, with special reference to the problem of cultural and vocational education" and the curriculum. The first-year student is thus acquainted with the problems, curriculum and status of his college, and its broader relations to life. According to Ewer, this includes: (1) a survey of studies not included in the curriculum of the freshman year; (2) information of certain methods of study employed more or less throughout the college year; (3) a provision for the discussion of college questions. His two-year test of this course and student opinion enable him to state that "systematic instruction in matters of College Life appears well worth while."

A similar course in the "aim, scope and value of a college course" for "freshman orientation" is required at Brown University. This course first discusses the right attitude toward studies, the lecture system, attendance upon classes, examinations, methods of note-taking, arrangement of courses, honors, prizes, student finances, college institutions, relations with the faculty, freshmen advisers, facilities for study at the university and in the city, student activities and conduct, health, and the use of the library. It then develops a comprehensive view of the extent, contents and purpose of the

academic curriculum. It is intended that this be "without regard to the departmental lines as they are more or less accidentally drawn at Brown, although the fields of all departments should be covered; that the lectures should undertake to explain to the freshman the scope, value and extrinsic relations of the subjects discussed; that they should avoid the attempt to give an epitome of any course, or to develop a particular phase of it instead of a general explanation of its content; and that reference to particular courses or teachers be as far as possible avoided." This most practical Brown plan consists of twenty-eight lectures, extending through the year; and the speakers are not limited to the college faculty. The lectures on the "College" by President Burton may become the nucleus for a similar course at Smith. This method of direct, concentrated presentation tends to eliminate present wastes. It is the "shortcut" to that necessary information regarding "college studentship and citizenship" which "was ordinarily left to the student's casual acquaintance."

Another important means of broadening the student's attitudes is the Vassar system which allows attendance upon lectures which require no preparation and offer no credit. Corresponding to the German university-system of Auditors, this might well be introduced in these colleges for their juniors and seniors, for students may be able to attend profitable lectures on subjects of special interest, and yet be unable to do outside reading, prepare papers and undergo examinations. In the class of 1915, a total of 87 Vassar students so attended lectures in fifteen departments. There were 16 auditors in four psychological courses, 13 in three courses in Physiology, 10 in nine courses in History, 7 in five English courses and 7 in four Geology courses. The remainder were scattered among the departments of Art, Music, French, Latin, Biblical History, Economics, Chemistry, Physics and Zoölogy.

In conclusion, a course initiating the first-year student in College Life seems to be a primary factor in solving the difficulties which hedge the "elective system." If in addition to such instruction, there is correlation with an organized system of faculty advisers, coöperation with the Student Government Association and significant work done for the stimulation of interest in the vocational fields, a marked change in the student's attitude toward the curriculum and a widening of her elective field must necessarily ensue.

CONCLUSION

Certain points in a comparative study of this nature may well receive special emphasis. There are, however, certain

relatively intangible factors which influence the statistical investigation of student electives, in the absence of adequate elective preferences. The election may be strongly influenced by preferences for certain faculty members. Again, every college has several courses accepted as "easy." These may be elected both by the student who is not inclined to work any harder than necessary and the student who rightly elects such a course in connection with others requiring more time and attention. A third factor is the elective influence one student may exert over her friend who is, so to speak, in a passive state of elective-attention.

Certain constructive suggestions looking towards a definite basis for the elective system are, first, a required course in College Life, descriptive of the curriculum but emphasizing scientific and vocational motives; second, an adequate system of faculty advisers to bring the student into personal relationship; finally, organized vocational guidance.

Exclusive of the Wellesley departments which grant special certificates and involve added periods of study, the "vocational" plays a minor part in the curricula of Wellesley, Smith and Vassar colleges. The vocational factor at present relates only to certain special departments and certain applied courses which the student may elect in preparation for her chosen vocation.

There is a clear lack of interest in the study of Education. At neither Wellesley nor Smith is Education elected by at least one-half the students of a given class, while the majority of those electing in the department limit themselves to a year's work. Vassar has merely a semester course hidden away in the department of Philosophy. The important practical branch of Educational Hygiene, for instance, seems entirely neglected at these colleges.

Vassar leads in the emphasis on Psychology, with more than six times the number of courses elected at Wellesley and Smith, exclusive of their requirement. On the other hand, the total number of courses, exclusive of requirements, elected in Philosophy at Wellesley approximates those of Smith and Vassar combined.

With the exception of a few courses at Smith, the science of Sociology is sadly neglected. The perusal of any good text of Sociology should eliminate the fallacy that other subjects of less value should have precedence in the quantity and quality of courses.

Little importance is yet attached to the Science departments. This contention is supported by the lack of concentration in the sciences, by the slight attention devoted by students of

Phi Beta Kappa grade and by the relatively small percentage of students electing science work beyond the requirements.

Preliminary to the statistical statement of the actual courses elected, a tabulation was made to obtain some suggestion of departmental preferences. The results showed an excess in the numbers of courses and faculty members in English, History, German and French. Later investigation corroborated this preliminary evidence of an over-emphasis upon language and literature.

The number of year-hours of required subjects definitely designated is approximately twenty-one at all three colleges. Both Wellesley and Smith require eighteen year-hours of concentration. Statistics, however, reveal that Vassar, with no such requirement, shows only a small increase in the per cent. of "scattering." In an "Auditor" system, 42% of Vassar students participate, the largest number in Psychology and Physiology.

A study of the faculties of the different colleges shows a decided preponderance of women teachers. This is surprising, for it does not follow that college women must for the most part be also taught by members of their own sex. This may tend to have a minimum, perhaps even negative, effect upon the student, rather than the desired maximum. Cleveland, in his statistical study of the preponderance of female teachers, concludes that "after puberty male influence is necessary for the proper development of both boys and girls" (9). A more adequate balance would seem to be the approximate equalization of the sexes.

Finally, the Student Government Association may again be mentioned as an efficient agent in college education. President Meiklejohn rather thinks there is too much talk, too much meddling and too much legislation about student activities; if there is one thing which lessens the interest of a junior or senior, it is the being "told" what she must do, when to her and to other students different decisions appear more feasible. The best stimuli for general student response originate in the student body, and this Association represents the organized initiative of the student community. Its constructive function, the expression of combined student opinion, may be effectively applied to the problems of the elective curriculum.

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HISTORY OF EDUCATION IN STATE NORMAL SCHOOLS *

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As the state normal school is almost universally an institution with a short course (ordinarily two years) definitely intended to give its students a mastery of such knowledge and technique as will fit them to teach efficiently in the elementary school, it is not to be expected that the curriculum shall contain much material that does not bear very directly upon that work. Its cultural subjects are almost certain to parallel those of the elementary school while its professional work is likely to bear very immediately upon the technique of teaching or learning. To this general tendency there is one frequent and almost universal exception, the course in history of education, a subject which cannot well have the same specific professional value as methods of teaching, educational psychology, or principles of education.

Of ninety-eight catalogs consulted in this study, all but one show that history of education is one of the required or elective subjects in the course for teachers in elementary schools. In the bare fact of offering some kind of course in this subject all sections of the country agree, varying needs of North, South, East and West making no appreciable difference in the presence of a course called history of education, history and principles of education, history and philosophy of education, or evolution of education.

Amount and Distribution of Time.—Nothing could show the lack of uniformity among American normal schools more clearly than the extreme variability in the amount of time given to the study of the history of education, although the figures here given probably over-emphasize the general fact of variation. The accompanying table shows the amount of

* This study is based upon recent catalogs of ninety-eight state normal schools, distributed as follows: Alabama, 1; Arizona, 1; California, 3; Colorado, 1; Connecticut, 2; Georgia, 2; Idaho, 1; Illinois, 3; Indiana, 1; Iowa, 1; Kansas, 1; Kentucky, 2; Louisiana, 1; Maine, 5; Maryland, 2; Massachusetts, 4; Michigan, 3; Minnesota, 4; Missouri, 4; Montana, 1; Nebraska, 1; New Hampshire, 1; New Jersey, 3; New Mexico, 1; New York, 9; North Carolina, 1; North Dakota, 3; Ohio, 1; Oklahoma, 6; Oregon, 1; Pennsylvania, 5; Rhode Island, 1; South Carolina, 1; South Dakota, 1; Texas, 2; Utah, 1; Vermont, 2; Virginia, 2; Washington, 2; West Virginia, 3; Wisconsin, 8.

time allotted in two ways, by weeks and by total number of hours. In each case there is a clearly marked central tendency, about eighteen or nineteen weeks, that is, a half-year, or a little less than eighty hours. While comparatively few catalogs show the length of the recitation period, such as do make it seem reasonable to assume a general prevalence of the forty-five-minute period. The disagreement in total number of cases is due to the fact that some catalogs show clearly only the total number of hours while others show only the total number of weeks or the fraction of a year without any definite indication of the number of periods per week.

The reasons for lack of uniformity in the amount of time offered or required are probably to be found in such factors as the following: estimated value of the subject; time available; amount of material to be covered, depending largely upon the text-book selected; method of presentation; and preparation of the teacher.

A comparison with Ruediger's study on "Recent tendencies in the normal schools of the United States" (*Educational Review*, March, 1907), which shows a median of 13.7 weeks offered (hours not given), indicates a decided increase in the amount of time given the subject, although his study shows a decrease from 19.5 weeks in 1895 to 13.7 in 1905.

TABLE SHOWING AMOUNT AND DISTRIBUTION OF TIME

Weeks	No. of schools	Hours	No. of schools
0	1	0	1
6	1	18	2
9	1	24	1
10	2	36	3
12	19	50	2
13	1	54	8 (1)
18	18 (2)	60	15 (1)
19	2	65	1
20	16	72	3
24	16 (2)	76	1
36	2 (9)	90	6 (9)
60	(1)	95	1
72	(1)	96	1
108	(1)	100	15
Total 79+16—3 (overlapping)		108	1
		120	11 (2)
		144	1 (1)
		234	(1)
		Total 73+15—2 (overlapping)	

Median of time offered counting required and elective, 20 weeks or 91.7 hours.

Median required (counting cases where all work is optional in the number for zero in time), 18.4 weeks or 63.8 hours.

Median required (counting only the schools where some work is required), 18.8 weeks, or 76 hours.

Average (counting only required work), 18.4 weeks, or 78.9 hours.

The numbers in parentheses indicate cases where the work is elective. Some schools offer both elective and required work; hence the overlapping.

Most schools offer no courses in addition to those required, but there are a few which offer a large amount of additional elective work. The Indiana State Normal School (Terre Haute), for example, offers four quarters of twelve weeks each, although but one quarter is required in the two-year course and two quarters in the three-year course. The Kansas State Normal at Emporia offers five historical courses, amounting to more than 200 hours. The Colorado State Normal College (Greeley) offers six two-hour courses running through two years.

In view of the decrease in amount of time found by Ruediger and the low median (13.7 weeks), it is remarkable to discover that catalogs for 1912-13 show that almost three-fourth of the schools (72.8%) now offer a half-year or more of history of education; while more than nine-tenths (91.8%) offer fifty hours or more; and more than three-fourths (76.6%) require a like amount. Evidently the tendency to offer an exceedingly short course has been found unsatisfactory; or perhaps the scope and quality of the text-books appearing within the past eight or ten years have combined to give increased worth to the subject and create a demand for more time.

Aim and Value.—While the history of education can hardly be said to possess the direct preparatory value which educational psychology or method of teaching has, the foregoing facts in regard to time allotment show that it is not without a relatively high appreciation. More direct evidence of its actual or expected value may be found in the definite statements which many catalogs contain. Although many of the following statements must be taken as expressions of what is hoped for, rather than of what is demonstrably gained, they do show a deep appreciation of the value of the subject. No attempt will be made to evaluate such expressions of opinion as are here quoted, although it may be well to keep in mind the fact that the opinions are probably written either by teachers of the subject naturally inclined to magnify their office, or by administrators just as strongly disposed to make everything offered in the course of study seem of maximum value to the prospective student. The following quotations will show what the aim or value of the subject is supposed to be:

To enable the students to form a conception, in the light of history, of the meaning, function, nature, process, and means of education, and thereby to win a more complete mastery of the present world of educational theory and practice. Los Angeles, Cal.

Aid in determining the principles in great educational systems.

Help in appreciating the forces that operate in our own educational era. Florence, Ala.

Aims to present the cultural development of the race as it comes out in the growth of schools and in the development of thought as represented by the philosophers and educational reformers. Tempe, Ariz.

Education as a phase of a larger social process in which educational ideals, practices, and institutions are on the one hand determined by the progress of civilization, and on the other hand are determining factors in the evolution of society. Greeley, Colo.

The past as a basis for the interpretation of modern educational theory and practice. Athens, Ga.

The aim is to develop an historical background so that there may be an intelligent appreciation of the purposes of modern elementary education, a realization of the nature of modern democratic tendencies and of the social demands upon the school, and finally to awaken such broad educational interests as will prompt a life long study of social needs and educational readjustments to meet them. Milledgeville, Ga.

These courses aim (1) to make an interpretation of history in terms of man's conscious, rational effort to improve the total conditions of life and realize higher human ideals by means of education; (2) more specifically to trace the origin and development of educational ideals and processes in their relation to dominant life-problems; (3) to form more accurate standards of evaluation and practical judgment of present educational conditions; (4) to get inspiration and motive from the lives of persons who have made eminent contributions to the solution of the human problem in the field of education. Ill. State Normal Univ.

Body of knowledge and historical perspective. Emporia, Kansas.

To broaden the student's educational horizon by making him familiar with the leading educational theories and systems that have influenced our present ideals and practise. Cedar Falls, Iowa.

This subject is taken as a necessary part of the future teacher's professional equipment. "The right acquaintance with the best that has been thought and said touching one's profession is a liberal professional education." Lowell, Mass.

To lay a foundation for future reading and discussion. Bridge-water, Conn.

The purpose of this course is to trace the development of educational ideals and of actual educational institutions. When studied in this way History of Education should be of both academic and guidance value to the prospective teacher. Mount Pleasant, Mich.

To give the student an understanding of the development and evolution of our present complex school system. Cape Girardeau, Mo.

Relation between the individual and society and the development of both. Newark, N. J.

This course aims to give the pupils a clear view of the general trend or progress of education; to help them reason from effects to causes; to aid them in finding the significant principles in great educational systems; to make some acquaintance with the great educational reformers; and to appreciate in some measure the forces that are operative in our own era. Oswego, N. Y.

The purpose of this work is to reveal the value of education as a liberating and liberalizing factor in life, and the mission of the school as a transmitter of the cultural gains of humanity and as a stimulator of continual progress; to stir reverence for the mission and rights of childhood, as well as for the claims of every individual to the fullest educational advantages; in short, to deepen and widen

the professional perspective of students, to enable them to secure the foundation of an adequate science of pedagogy. Cleveland, Ohio.

The chief purpose of this course is to establish an understanding of present educational ideals, practices, tendencies, and problems. Edinboro, Pa.

To trace the development of modern educational thought and practice, and obtain such knowledge of educational systems as will enable them to avoid the errors of the past and adopt what is tried and true, to become inspired by the devoted lives of the world's great teachers and be led to form the noblest and best possible ideals of the work in which they propose to engage. East Stroudsburg, Pa.

The function of History of Education in the normal school is considered to be, to give the teacher as he is beginning his work an understanding of the purpose of education to-day, a realization of the social demands of the school, and an appreciation of the place and function of the school and of its work; to bring more clearly before him present educational needs and problems. Providence, R. I.

It is the purpose of this course, first, to form an idea of what have been the chief aims, materials, methods, and results of education from the time of the Greeks and Romans to the present time; second, to create a deep interest in the lives and works of great educators; third, to study, in the light of the past and present, legitimate aims, materials, methods, and results of present day education. Spearfish, S. Dak.

In summarizing these expressions of hope and belief, we find that history of education is supposed variously to serve the following purposes: (1) to broaden the student's educational horizon; (2) to show the place of education in evolution; (3) to give an understanding of what education is; (4) to develop interest in education and in the lives of great educators; (5) to furnish inspiration and motive; (6) to develop standards; (7) to aid in finding significant principles in educational systems; (8) to give an appreciation of the forces at work in modern education; (9) to enable the teacher to avoid the errors of the past and adopt the tried and true; (10) to stir reverence for the mission and rights of childhood; (11) to help the teacher reason from effects to causes; (12) to afford a liberal professional education; (13) to form the noblest and best possible ideals of the work of teaching; (14) and finally, with its academic and guidance value, to serve as a foundation for a science of pedagogy.

In contrast with this glowing summary of values may be quoted a passage from Suzzallo's discussion of "The Professional Use of History of Education" (1908).

"Of late there has been a growing scepticism among practical educational workers with regard to the worth of history of education. Considerable criticism has accompanied a belief that it has not been a sufficiently useful professional tool. In the minds of these critics it has not always been clear whether the difficulty is inherent in the subject matter, or in the manner in which such knowledge is treated. Certain it is that men who tend to see the whole present-day educational problem in the device and method of teach-

ing alone, are inclined to regard the whole subject as a rather heavy investment of energy for a very small return. On the other hand, it seems equally certain, that those who view the modern educational situation in its broader aspects, who see in education a large social movement interplaying with many other forces in our civilization, are inclined to regard the whole historic aspect of our professional work with more favor. The criticism of such would fall not upon the subject but upon its treatment. Whatever be the cause of the discontent, the problem of the worth of the history of education is before us." (p. 28.)

The foregoing summary from various catalogs, if misinterpreted as being *in toto* the belief of any individual, will offer devotees of formal logic an excellent example of the fallacy of composition. The subject may have all of those values, there may be persons who hope or believe that it has; but this study should not be taken as evidence of such a condition.

Nature of the Material.—Judging from the diversity of purpose shown in the foregoing discussion of aims and value, one could hardly expect to find uniformity in the courses offered. Such an *a priori* expectation of diversity is amply justified by the facts. The courses described in the various catalogs may be classified as follows:

1. The general course, usually covering European history, ancient, medieval, and modern, sometimes with a little source material, but ordinarily with only a text-book and library references to other secondary material. In some schools the general course treats only modern times.

2. A general course partly historical, emphasizing educational principles, philosophy, or problems.

3. Biography of great educators, often part of the general course but sometimes offered alone.

4. Educational classics.

5. (a) A course in American history of education. Some of this material is given in the general courses; but there are a few schools which offer a separate course covering this field.

- (b) Special material on the history of education in the state in which the school is situated. Only a few catalogs mention the special use of such material.

6. Present-day educational problems treated historically,—to be distinguished from the course which is a general study of the field with special reference to problems.

7. Courses in special phases of education, such as the evolution of secondary schools, or the history of industrial education.

8. Comparative education, a special course in which French, German, English and American school systems are studied as part of the work in the department of history of education.

To the foregoing may be added

9. Incidental historical treatment of such subjects as arithmetic, reading, and grammar in courses not primarily historical.

If all these courses were offered in all schools, we should necessarily infer that a great deal of attention is given to adapting the material to individual needs or tastes. But as very few schools offer anything other than the general course no such inference can be made unless it be assumed that such a course is a kind of intellectual atmosphere essential to the life of every teacher. An explanation which seems to fit the situation, although it is not flattering to normal schools, is that these courses are generally given in imitation of the work done in university departments of education. Or it may be that a certain kind of material is easily available in text-books which can be placed in the hands of the pupils. While those persons who theorize on history of education generally agree that a course based upon the lives of great educators is not satisfactory as a general course, that it misses one of the most essential aims (that of showing education as the highest form of evolution and tracing the process of that evolution) few schools offer little if any work that is not biographical. Where the aim of the course is decidedly that of giving inspiration, the almost exclusive use of this type of material may perhaps be justified; but the historian must grieve over the sacrifice that is often made to secure inspiration. It is sad to find that the inspirational sort of material often needlessly lacks accuracy; and the accurate kind of history just as often fails to give inspiration. One of the best text-books now available demands the utmost enthusiasm on the part of the teacher to keep the students working at it; while another work, glowing in style and easy to read, has some howling historical inaccuracy on almost every page.

At the present time, so far as one may judge from the material at hand, the problem of adapting history of education to the needs of the elementary school teacher has not been solved. Indeed one might infer from reading normal school catalogs that there is no wide recognition of the principle that the material should be chosen to fit the needs of such teachers rather than those of teachers in general. It is probably true that the very same statement could be made of psychology, a subject generally regarded as much more directly necessary in the preparation of the teacher; but that, instead of being a justification of the present conditions, is rather the revelation of a widespread weakness in our scheme of training teachers. The situation is not without signs of improvement however, for quite a number of catalogs show that the teachers of history of education in normal schools are

breaking away from tradition and from the domination of the university department of education and are making very serious attempts to adapt both material and method to the needs of their own pupils. But the following fundamental questions are still unsettled: Should the course in history of education be primarily history with emphasis upon the ideas of development and progress with special attention to social, political, religious, and industrial conditions? Or should it be the handmaid of a course in principles or philosophy of education, serving as a background for psychology, principles of teaching, aims and values in education? Should the work be primarily to give inspiration or to furnish content, assuming that there is much useful material which has no easily available inspirational value? Should the material be regarded as liberal or strictly professional? Should the topics treated work back from the immediate problems of the present to their historical origins or should they be given in their own varied settings with little or no forced effort to make them bear upon such phases of education as seem of greatest importance at the present little moment in the world's history? Should there be a definite elimination of all those phases of the past that have apparently little definite and immediate bearing upon the work of elementary education or should a broader outlook govern the selection of material? For example, should we omit such topics as scholasticism, the rise and development of universities, medieval Saracenic education, the education of the aristocracy in England, Germany, and Italy, and the evolution of secondary education? Should the course generally offered include only modern education with special reference to our own national evolution, or should primitive, ancient, and medieval education be added? Should a few types be selected for intensive study, or should the view be general even though diverse?

In consequence of this array of unsolved problems it would seem wise for the administrators of normal schools and especially the teachers of history of education in such institutions to make a concerted effort to agree upon certain definite and attainable ends, to make a careful survey of the field and determine what material (regardless of courses offered in universities) will most effectively meet the needs of their students, and to look toward the emancipation of the subject from its present uncertain position in the curriculum. The making of a syllabus by a state board of education should have a tendency to free the subject from slavery to a textbook; but most of the work along this line, as far as the writer has been able to judge, has been very evidently a mere arranging of topics selected from a few textbooks which happened to be available

to the person charged with the making of the syllabus. Such work is futile except in the one respect that it gives the student a more or less definite idea of what he may expect in the state examination, a kind of knowledge that tends to make the passing of an examination seem more important than individual development.

The solution of the problem of material to be chosen in history of education lies almost entirely in the hands of the persons who teach the subject and of those who administer the normal schools, not in the hands of university teachers or even of state boards of education.

Method.—Without doubt the prevailing method in use in the treatment of history of education is study of some text-book followed by class recitation or discussion. Sometimes the teacher lectures; but the statements in catalogs show that normal schools at least have generally evolved beyond this ancient or medieval method of instruction. There is frequent mention of reports and required supplementary readings; and the keeping of note books is occasionally suggested.

But all this represents only the mechanical side of method. There is quite a little evidence that the teachers of this subject have some appreciation of method as an intellectual matter. We find fairly good grounds for believing that there is serious effort devoted toward breaking up the isolation which is likely to afflict history of education or any other subject of study which has a content clearly its own.

One very general method of establishing interrelations in the minds of the students is to refer frequently to present conditions and problems in such a way as to make facts learned from the text-book seem more than mere rubbish from the ruins of the past. In at least one catalog the work is represented as beginning with present problems and then proceeding into the past for explanation. Another form of this same process of correlation is seen within the subject-matter itself; for example, the attempt to relate the study of schools and education in a narrow sense with the social, political, religious, and industrial conditions of the period studied,—a kind of correlation which is mentioned so frequently that one is tempted to infer some common source which is variously quoted or paraphrased. Some schools add to this an emphasis upon cause and effect with an effort to trace effects back to their causes. Occasionally there is mention of the method of type studies, a form of teaching which the Herbartian will fit into the general scheme of correlation.

The conscious attempt to build up educational concepts is a type of method which might be inferred from many of the statements of aim, but which is rarely mentioned as an idea

which the teacher keeps or is to keep consistently in mind. In connection with the attempt to build up concepts we must not overlook the practice of drawing a definite moral or pedagogical lesson, a practice which clearly survives in spite of age-long advice not to spoil a story by making it the occasion for a formal moral lesson. A favorite form of the concept-to-be is seen in the aim "to show how different individuals, nations, and civilizations use educational forces in pushing forward progress and reform."

The syllabi furnished by state departments of education would lead to the belief that the treatment of the subject is or should be very clearly topical; but from the material afforded in the catalogs at hand one is hardly justified in believing that division into topics, sub-topics, etc., is carried very far or is used to any great extent, although a general or loose topical arrangement is necessary. There is, however, no evidence of the practice of anatomizing history; but in spite of the silence of the catalogs there may be teachers who require their pupils to analyze the material all the way from "Roman A" to "Arabic ninety-nine."

It is evident that history of education has developed no special technique of its own; that the method of teaching varies somewhat with variation in aim; that teaching in this field is probably good, bad, and indifferent just as it is in everything else—except observation, where it is almost uniformly bad. The pressing question is not one of method as much as of time and material, both affected by the maturity of the students. It is certainly futile to ape university methods when one has immature students who have but a few weeks to devote to this subject at best and who feel very keenly the pressure of other work. The needs and problems of the present must be emphasized; the past must not be permitted to monopolize the energy of the student in such a way as to make a mere antiquarian of him. And here lies the most difficult of all problems in history method. Shall the teacher seize a few present-day topics and trace them back to their historical beginnings? Or shall he take the past as he can find it, try to see it as it was, and set himself the task of tracing out how what was became what is? The first possibility is an attractive one; but very few people have as yet attempted to use that method. Its use would demand more time than is generally available, would necessitate a great change in the arrangement of subject matter, and might call for more skill and better preparation than most teachers of the subject now have. The second method is the easy way, the way of the textbook; it follows the plan that has almost always been used and will perhaps forever continue to be found practically

most usable if not theoretically most useful. Here is an excellent opportunity for experimental study of the value of various methods.

The Teaching Force.—While not much can be learned of the qualifications of teachers by reference to catalogs, there are two sets of facts that are revealed with a fair amount of clearness: academic preparation, as shown by degrees; and subjects taught in addition to the history of education.

In a total of ninety, it is found that there are eight persons who have no academic degree; twenty-two bachelors (including A.B., B.L., B.S., Ph.B., and B.E., the degree in arts numbering fourteen); thirty-seven masters (all being in arts except a single one in science); eighteen doctors (fourteen in philosophy, three in pedagogy, and one in science); and five in schools whose catalogs do not show what degrees the members of the faculty have received. This is a rather better showing of doctors than one would have expected,—20% of the total, while the percentage of masters and bachelors is respectively 41.1 and 24.4.

Ruediger found that in 1905 only 11% of the total teaching force in normal schools had the doctor's degree, 18%, the master's degree, and 17% the bachelor's. While the two sets of figures are not directly comparable (his referring to the whole teaching force and mine to teachers of history of education), it is certainly not going too far if one regards the comparison as showing what is generally optimistically believed,—that there is a marked tendency upward in the preparation of teachers in normal schools.

It is impossible to use a degree alone as evidence that the possessor is specially prepared to teach history of education. Even the doctor of philosophy may be less thoroughly prepared than the person who has no degree at all if the former has devoted himself exclusively to some field other than that which he is teaching and the latter has given some time to special preparation for his work. But we may get a certain amount of enlightenment by considering the work which teachers of history of education do in addition to teaching that subject. The school in which the teacher is permitted to confine his efforts to that field alone is hardly ever to be found, but in the great majority of cases other professional subjects are a regular, perhaps major, part of his work. To one who appreciates the difficulties under which many normal schools work, it is no great surprise to find that a single person often has the entire group of so-called pedagogical subjects, sometimes in addition to the duties of the principalship. Nor is it much of a shock to read such a list as the following, all given by one teacher: modern educational problems, current educa-

tional literature, history of modern education, Greek and Roman life and education, German and French life and education in the nineteenth and twentieth centuries, American education, principles of education, social education, moral and religious education, philosophy of education. It is hardly necessary to remark that not all are given in the same semester.

In contrast with this grouping of professional subjects we often find a combination of history of education with one or more of the following: mathematics, nature study, belles lettres, ethics, biology, geography, physical geography, agriculture, civics, history, and physiology. One of the most bizarre combinations is the following: "pedagogy, didactics, history of education, civics, child study, agriculture, and school management;" although the agglomeration of "biology, psychology, school hygiene, school economy, principles of teaching, and history of education" is about as fantastical.

Some of the combinations are not altogether unpromising, for example, history of education and history. In view of the very general practice of having history of education taught by a psychologist or a philosopher, one turns with a great deal of hope to the idea of having the subject taught by a person trained in history. But there are not enough cases of this kind to make one feel sure that it has happened from design rather than by chance. Where history of education is listed with "History and Social Science," as it is in the catalog of the St. Cloud, Minn., State Normal School, it seems reasonably certain that the arrangement is due to an idea in regard to what is fitting in the grouping of subjects, not to the mere chance of finding a history teacher who had less work than a psychologist.

From the evidence offered by statements in catalogs, it seems very clear that history of education is generally regarded as a subject which requires no special preparation, which anyone can teach if he has the ability to read such English as is found in the textbooks that are used. The almost universal practice of having the subject taught by a person whose major interest is in something else must militate very strongly against effective work. The traditional alliance of history of education with principles tends to obscure what history there is in the subject, while it tends to reduce to hodgepodge such little system as there is in what is commonly called "Principles of Education." Generally speaking the subject which has to suffer on account of the bias of the teacher or lack of preparation is history of education. The subject can never rise to a respectable level until it is regarded as requiring the very broadest preparation, with history and sociology as auxiliaries to the narrower field of education.

Conclusion.—This survey of conditions concerning the history of education as it now appears in state normal schools shows very clearly that the subject has not yet reached that high plane where any change must be for the worse, nor is its condition such that any change must be for the better. The opportunities for improvement are many and the need for change in some particulars is pressing.

First of all, the purpose of the subject in a course for elementary teachers should be understood and made to serve as a guide in the selection of material and the methods of teaching. Disregarding secondary purposes, we may say that the fundamental function of the subject is to give the student that increasingly broad outlook upon life and education which comes from a study of education as a phase of social evolution. This means negatively that we must not regard a knowledge of method, device, pedagogical principle, or school room practice as the most essential part of the work. The tendency to make the history of education a mere history of schools and teachers has made for narrowness rather than breadth of outlook.

The material selected should show a conscious effort to realize the foregoing purpose, but with the understanding that it is not necessary to go to the very beginning of time and elaborate every possible detail to develop breadth of outlook upon education as a social process. Much of the erudition that now encumbers textbooks should be branded as pedagogical piffle and left to those who have time and taste for it, leaving the overburdened and immature student time to acquire more profitable ideas. The needs of the elementary teacher should be kept in mind, but no misconception of immediate needs should be permitted to make the course a mere study of the elementary school as an isolated institution. In those states which have a significant educational history it may be worth while to magnify that phase of the work; and in every state, with a few notable exceptions, more attention might well be given American education.

If the teacher feels that biographical material has an inspirational value, the lives of a few great educators may be introduced in a supplementary way, rather for reading and appreciation than for mastery of detail. But the practice of offering a course in educational biography in place of that in history of education misses the mark almost entirely. The attempt to get the beginner to master four or five bald facts about each of forty or fifty more or less illustrious persons leads to the most pernicious practice of verbal memorizing and makes it almost if not altogether impossible to give a broad view of education.

In the ordinary two-year normal course offered graduates of four-year high schools, it would be much better to give a four-hour course for half of the second year showing the European background of American education and tracing the development of our system as a social institution than to attempt to run an intellectual Marathon from Ab the cave man to George, Mike, Ole, Heinrich, and Jean, the modern industrial workers. It is true that the teacher would be hampered by the lack of a textbook that would accomplish this for him, but the giving of such a course would demand a type of preparation which is not generally found where the teacher is permitted to follow one of the general works which now have the widest vogue.

Finally, the most urgent need of the present lies in just this phase of normal school administration, the securing of teachers who are adequately trained to teach this broadest of all subjects. We must abandon our idolatry of the textbook and adopt the policy of securing persons to teach history of education because they have enough faith in its value to secure adequate preparation for their work. As long as we let anyone, mathematician, taxidermist, biologist, or philosopher carry the work as an unwelcome addition to his own proper duties, we may expect only meager results. Great as is the need in this matter, the signs for the future are not unpromising. The change in the general character of the preparation of the teaching force as shown by the increasing percentage of masters and doctors is a most hopeful sign; and history of education, a subject which has been receiving increased recognition during the past seven or eight years, may reasonably be expected to benefit by the general upward tendency.

A CRITICAL STUDY OF RICE'S INVESTIGATION OF SPELLING EFFICIENCY

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Eighteen years ago (1897) Dr. J. M. Rice published the results of an extensive investigation of American school conditions. In this investigation mere personal opinion was to give way to objective facts as criteria of efficiency in spelling, and individual observation was to give way to a quantitative study of large numbers. To-day these are commonplace principles of investigation but at the time of this study they were nothing short of revolutionary. However, the study possesses more than an historical interest. It raises the fundamental problems of statistical study and hence a thoroughgoing criticism will yield suggestions concerning the essential characteristics, purpose, utility, and limitations of statistical study in general.

Aim.—The general aim of Rice's investigation was the study of school economy. The working hypothesis was: Is there a closer relation between spelling efficiency and maturity, and the personal equation of the teacher than there is between spelling efficiency and time spent, method, age, nationality, heredity and home environment? His particular problem was to find the relation between time spent (also method, age, nationality, heredity, home environment, maturity, personal equation of the teacher) and efficiency in spelling.

Means.—Inasmuch as this is the first study of its kind, the investigator had no historical material at his disposal except the popular controversies concerning the place and worth of spelling among school studies. To these he referred. The test material consisted of common English words variously presented. The first test comprised the following fifty words, the same for all grades: furniture, chandelier, curtain, bureau, bedstead, ceiling, cellar, entrance, building, tailor, doctor, physician, musician, beggar, plumber, superintendent, engine, conductor, brakeman, baggage, machinery, Tuesday, Wednesday, Saturday, February, autumn, breakfast, celery, cabbage, dough, biscuit, chocolate, vegetable, scholar, geography, strait, Chicago, Mississippi, Missouri, Alleghanies, independent, confectionery, different, addition, division, arithmetic, decimal, lead, steel, pigeon. In the second test words were written in sentences, such as, "While *running* he *slipped*," "The *weather*

is *changeable*." Fifty words were employed in the fourth and fifth year classes, and seventy-five in the sixth, seventh and eighth. In preparing the test special care was taken to avoid words whose pronunciation would reveal the spelling of the word, such as, tailor, doctor. The words were largely but not entirely the same for all grades. Third, an indirect test of spelling was made in the form of compositions. The compositions represented a story specially prepared for the purpose and were accompanied by a picture. The compositions were largely prepared under the personal supervision of the investigator; but some were prepared under the supervision of other persons who had the confidence of the investigator, and some, by the teachers alone.

These three tests were given to school children, both sexes, of the fourth, fifth, sixth, seventh and eighth years of public schools in various cities throughout the United States. The 33,000 children tested represented various nationalities and races. The first test was given to 16,000 children; the second, to 13,000; and the third, to nearly 4,000.

Method.—The data were collected by group tests and submitted to further statistical treatment.

Procedure.—The plan included the gathering of data by means of a questionnaire sent to superintendents throughout the United States, and a second test, administered under the personal supervision of the author. The researches were begun in February, 1895, and extended over a period of sixteen months.

The original plan provided for the first test only. This was given in the form of a questionnaire sent to superintendents of various cities throughout the United States. The questionnaire contained a list of fifty words, together with a set of questions concerning the methods employed by the teachers and particulars in regard to pupils, such as, age, sex, nationality, occupation of father. In all, twenty-one superintendents responded. Presumably the first test was administered orally by classroom teachers and the results sent to the experimenter. The results of the first test proved so variable (the averages in the fourth year classes ranged from 33% to 95.3%) that the investigator became suspicious of the method of presenting the words. As replies to his questions concerning the methods used by different teachers did not reveal the cause of the variability the author decided to undertake a special tour for the purpose of giving additional tests. The first test also revealed defects in the material, that is, the presence of words whose spelling could be disclosed by careful enunciation.

The second and third tests were given under the personal

supervision of the investigator. The tests were presented by the teacher. The sentences were dictated; and the compositions were read, with the appropriate picture before the pupils, to be reproduced by the pupils.

The papers of the second test were temporarily marked by the pupils and finally corrected by assistants to the investigator. The method of marking the papers of the first test is not recorded. Presumably, in these two tests, the number of rightly spelled words were regarded and counted as of equal value. The marks for spelling in composition were based on the actual number of words written by the child and represent the number of correctly spelled words per hundred. When the same word was misspelled more than once in an individual composition one error only was counted.

The relation between the column and sentence tests is shown for the several cities, by grades, in average percentages. The actual number of mistakes made are not recorded. (1, Table No. 1, p. 74.) The relation between minutes daily and the results for the several tests by school and grade are given in averages. No summary of the results showing this relation is presented. (Table No. 2, p. 74.) Three other tables (p. 84) present results showing the relations of age, "intelligence," nationality and environment to spelling ability. No graphs are used in showing results.

Results.—A summary of Table 1, "General Averages for Cities," shows that the column test is inferior to the sentence test in two grades (4th and 5th); superior in two grades (6th and 7th); equal(?) in one, the 8th. The amounts of difference are, respectively, + 10.7%, + 10.8%, - 5.2%, - 2.2%, + 0.2%. The algebraic sum, + 14.3%, is in favor of the sentence test and the average superiority is 2.86%.

The material for the study of the main problem of the investigation is given in Table No. 2, "Averages for Individual Schools" (p. 74). This problem is the relation between the minutes daily devoted to spelling and spelling efficiency, as indicated by the results of the several tests. The author concludes from inspection, it seems, that there is no relation. To show the facts even roughly, I selected the average marks in the sentence test, this being on the whole the most satisfactory, for each school (where comparison with minutes daily was possible) and compared these with the number of minutes daily devoted to the subject. Deviations from the average were recorded. A summary of the deviations shows: in one grade there are the same number of like and unlike deviations; in one grade the number of like exceeds the number of unlike deviations; in three grades the number of unlike exceeds the number of like deviations. In detail the results are:

for grade IV—8 like, 8 unlike and 1 zero pairs; V—8 like, 10 unlike pairs; VI—11 like, 8 unlike and 1 zero pairs; VII—5 like, 9 unlike and 1 zero pairs; VIII—4 like, 9 unlike pairs. In all there are 36 like, 46 unlike and 3 zero pairs.

The summary of results supports the previous statement, namely, that there is no relation between time spent and results.

A general statement of the results (pp. 72-91) concerning the relation of other factors to spelling efficiency follows: First, in regard to age, the author finds that the younger pupils are superior to the older, in each grade. This is another way of saying that the accelerated pupils surpass the retarded which, probably, no one would doubt. Second, there is a strikingly close relation between "intellect" and spelling efficiency. Third, the percentages of children of foreign parentage in relation to the general averages are, if not identical, slightly in favor of the foreign element. Fourth, the home environment of the homes of unskilled laborers and of those where a foreign language is used has little if any influence upon spelling efficiency. Fifth, there is no direct relation between methods and results (based upon data not presented). Sixth, the results indicate that maturity is the leading factor (p. 78). Seventh, the facts indicate that results are determined by the ability of the teacher (p. 90).

Conclusions. The conclusions which the investigator draws from his study are:

1. The amount of *time devoted* to instruction in spelling does not indicate the character of the results obtained (p. 80).
2. Age does not determine efficiency in spelling (p. 83).
3. The influence of nationality on spelling is nil (p. 85).
4. The influence of home environment exerts apparently little influence on spelling (p. 86).
5. There is no relation between methods and results (p. 88).
6. The influence of heredity is immaterial.
7. The results *seem* to indicate that maturity is the leading factor in learning to spell (p. 78).
8. In determining spelling efficiency the first place must be given to the personal equation of the teacher (p. 90).

In addition to the main conclusions of the investigation the author offers the following suggestions for pedagogical practice:

1. As to oral and written, column and sentence tests, the wise teacher will use as many methods and devices as possible in order to relieve the tedium and to meet the needs of individual children.
2. Under no circumstances should more than 15 minutes per day be devoted to spelling.
3. Words should be carefully graded (a) as to orthographical difficulties, and (b) as to the vocabulary of the child.
4. Precedence should be given to common words.
5. The course should be further abridged by excluding words that contain no catch difficulty.
6. Separate words that may be learned collectively (according to rule), and those which must be mastered individually.
7. Special drill should be given to a selected list of puzzling words.

Criticisms.—This initial study of spelling has aroused considerable discussion and criticism. The chief criticisms have related to the loose defining of issues (Suzzallo), laxity in control of conditions (Suzzallo), inequality of words (Thorn-dike and Buckingham), general procedure (Wallin), and conclusions (Wallin). For the most part they have been general or specialized and fragmentary. There has been no systematic effort to indicate the strong and weak points of the investigation.

Previous to 1897 in this country spelling theory and practice were controlled by no fixed scientific principles of general acceptance. Personal observation and experience were the criteria of right method. "One-idea" methods spread and were generally accepted, partly because no one possessed a sound set of principles for the critical evaluation of methods and devices. Waste, fads, blind acceptance of word formulas and diversity of practice followed, of necessity. For example, Dr. Rice found in one grade a variation of from nine to fifty minutes per day devoted to spelling, without appreciably different results. The same striking variations existed in method. For the solution of these problems Rice suggested and elaborated a scientific method of procedure. And whatever criticism of the execution of the work may be offered in light of the improved technique of pedagogical investigation, great credit must be given the author for initiating the use of scientific criteria in the study of spelling efficiency, where before there had been only opinion based on experience.

Aim.—The investigator was fortunate in the selection of his original problem. Previously, spelling efficiency had been studied in reference to results, as shown by teachers' marks. He raised the question of economy, that is, results in relation to time spent. His subordinate topics (which he sometimes tends to elevate to first place), namely, method, age, nationality, heredity, home environment, maturity and the personal equation, are also of great pedagogical significance.

But in addition to being worth while, the problem should be exactly defined. This was not done in case of the main problem, namely, "time spent" in relation to spelling efficiency, and we are left to assume that "time spent" means the amount of time per day devoted to spelling as a separate subject. Although the omission is relatively insignificant in case of such an obvious factor as "time spent" it becomes of immense importance when such factors as "the personality of the teacher" and "method" are introduced. The author loosely bunches all devices and methods of similar pedagogical title, as drill method, under one head. This step alone would rob his conclusion regarding method of much of its pedagog-

ical significance. This same criticism applies also to "heredity," "home environment" and the "personal equation of the teacher."

Means.—The reliability of results increases with the quantity of equally well selected words and with the variety of tests. But the number of words that can be successfully used is limited by administrative considerations and by the introduction of disturbing factors, such as fatigue. These facts are so obvious that this initial investigation did not fail to take them into consideration.

In addition to mere quantity, test material must submit also to qualitative conditions. These are (a) approximately equal familiarity, (b) graduated difficulty, and (c) uniformity for all grades. The first two may be arrived at experimentally in preliminary tests or by arbitrary selection on the basis of commonness. The investigator used the latter method. That he succeeded in a remarkable manner is shown by a study of the list of words that he used, but more emphatically by the performance of the pupils in the several tests. If the words had been too difficult, too small percentages would have occurred in the lower grades; if too easy, too large percentages in the upper grades. As a matter of fact, in the column test the minimum percentage was 33%, and only four schools fell below 40% in grade IV, while no school averaged above 90% in VIII; in the sentence test, no school fell below 53% in grade IV, and 90.3% was the highest percentage in VIII. As regards uniformity the column test met this condition completely; the sentence test, partly; and the composition test, most imperfectly.

The subjects were admirable selections both in quantity (33,000) and quality. A more representative group of American school children could probably not have been submitted to investigation. They were of diverse age, grade, sex, nationality, race and geographical distribution.

Method.—Experimental pedagogy knows two general methods, the experimental and the statistical. Here we are chiefly concerned with the latter. Some have attempted to limit the sphere of the statistical method to physical measurements, but it also has a place in mental and social measurements if its purpose, use and limitations are kept clearly in mind. Its purpose is the solution of problems which cannot be solved by experiment. These are (a) problems involving the determination of general group tendencies, in which large numbers must be measured in order to get significant results; (b) problems involving indirect control of conditions. Its successful use demands (1) The clear definition of the problem to be studied; (2) The limitation of the variations in a function

to variations due to changes in any one condition; (3) The control of conditions, (a) by the elimination of constant errors, and (b) by taking enough cases to balance chance variations due to uncontrollable causes; (4) The exact description of the status of a mental trait. The statistical method is limited to facts of quantitative determination. Qualitative facts are beyond its sphere. It is concerned with the what, not with the causes and conditions underlying phenomena. Because of these limitations of nature and purpose it cannot *settle* pedagogical questions. Many questions it cannot consider at all. Others it can consider but partially. At best, it contributes only a bit of evidence which is seldom, if ever, sufficient to decide the case. Failure to observe these fundamental facts is the chief criticism of the early statistical investigations.

The special mistakes in the early use of the statistical method have been first, the selection of problems to which it is not fitted; second, failure in maintaining conditions of control; third, the drawing of sweeping conclusions from partial evidence; fourth, having too much faith in statistical correlations the nature of which is questioned. Only the first, namely, the selection of problems to which the method is not fitted, will be mentioned under this topic. This mistake is, evidently, fundamental. The attempt to solve a good problem with a wrong method biases the whole conclusion. The criticism in question is illustrated in the author's attempt to treat "personality of the teacher" and "teaching method" by the statistical method. It should not be used in the first, and probably not in the second problem for the following reasons: first, they deal with subjective phenomena; second, they are difficult, if not impossible of definition; third, conditions are difficult, if not impossible, to control; fourth, there is a more satisfactory method for such problems, the experimental pedagogical method.

Procedure.—An investigation cannot be called scientific unless it fulfills the conditions of scientific procedure. That is, it must have three stages: first, a trial test, to familiarize the investigator with the plan and to locate unforeseen difficulties; second, a real test, to get data upon which to base the main results; third, the control test, to check the results obtained in the real test. The author provided neither for the trial test nor for the control test. The column test, to be sure, revealed certain defects of material, presentation, etc., and in so far it met the conditions of a trial test, but, that it did not completely do so is shown by the fact that it was unplanned, and that the results of the first test were incorporated into the results of the other tests and formed the basis for conclusions.

The lack of uniformity of presentation in the first test, which the author had the wisdom to discover, was not completely eliminated in the later tests. The class teachers who gave such unsatisfactory results in the first test, administered the second and third tests also. These were given under the "personal supervision" of the experimenter, to be sure; but, as he admits, it was impossible for him to be present in every class room during the entire course of the examination, and children could not be prevented from copying, especially where the rooms are furnished with double seats and where the teachers have no control over their classes. Other external conditions, which the author does not seem to have observed at all, but which must be taken into consideration in determining accurate measurements, are materials, seating, climate, time of year, time of day, varying subjective conditions of the investigator, etc. In addition to these conditions, which are external to the pupil, there are other important ones which may be called subjective. These are fatigue, motive, disposition and preparation. These were not considered, presumably, by the investigator and if they were controlled at all it was done unconsciously, by taking large numbers. It is practically certain that the author did not secure adequate control of the external and internal conditions just mentioned, together with the adequate control of the more important factors of age, sex, nationality, environment, grade and time spent sufficient to get highly exact and significant results from any one of them. At best, probable and general tendencies should be expected.

Checking should be done by disinterested and capable persons. The pupils themselves corrected the composition papers but these and, presumably, the other papers as well, were finally corrected by assistants to the investigator. The failure to take into account the varying difficulty of the words is criticised by Thorndike ('04, p. 8) who shows that, by an actual test with fifth grade children mistakes were made as follows: disappoint 37, necessary 42, changeable 42, better 3, because 1, picture 0. Buckingham ('13, p. 2) says, "To give these words equal weight in any test is to make inaccurate most of the conclusions based upon it."

The tabulation of results is the culmination of all that has gone before, and the basis of all that is to follow. Hence, deficiencies in tabulation affect the whole investigation. Two general principles control good tabulating and graphing: first, records of data should be accurate and complete; second, presentation should clearly show the significant relations between the factors studied. The author reports the results of his investigation neither accurately nor completely. They are

not complete in that: first, some of the material, such as the data on method, was not reported at all and second, because the figures which form the basis of the percentages are not given. The tabulating is not accurate, in that: first, tables of distribution, the only complete method of reporting the several measures of a variable fact, are not given; second, variability is completely ignored; third, the average is the only measure of central tendency, and since we do not have tables of distribution and the author does not indicate the nature of the same, we cannot be sure that the average is a reliable figure. Tabulation, in respect to showing relations between significant factors is defective in the following respects: first, in not presenting complete summaries (*e. g.*, Table No. 2); second, in showing relations inadequately (*e. g.*, relation of age to spelling efficiency); third, in failure to use graphs.

Results.—A complete statement of results should include both a general statement and a detailed summary of the important facts. The amount of detail is a variable quantity depending upon the importance of the topic, etc. The author in the main gives strong positive general statements of results. Detailed statements, also, are given frequently.

Since results depend for their validity upon the administration of the preceding part of the investigation, it cannot be expected, after the discussion of means, method and procedure just given, that they will have equal or detailed significance. In general we found that the material was on the whole fairly good; that the method was adequate for the solution of such problems as sex, age, time spent, etc., but was unfitted, for such problems as the personal equation of the teacher; that, as to procedure, the tests were poorly planned, inadequately controlled and incompletely and inaccurately tabulated. In view of these defects it follows that the results do not represent the facts accurately; that some are positively misleading; and that the more valid of them do not represent more than general tendencies.

Conclusions.—It is obvious that conclusions should follow from the results. In his final statements the author wisely separates the conclusions based upon data presented, or conclusions proper, from those inferences and suggestions for which no absolute proof has been given.

The validity of the conclusions may be affected first, by a misuse of the facts, taken at their face value, and, second, by inaccurate data. The investigator's chief mistake in the first place was in drawing a conclusion about subjective facts from a study of merely objective phenomena. In the discussion of method we made the distinction between objective and subjective facts, and saw that the statistical method is

limited to objective phenomena of quantitative determination. In the second place, the author's conclusions are vitiated by the deficiencies of the data upon which they are based. Such for example in the light of subsequent investigation is true in case of his conclusion: there is no relation between methods and results.

In view of the whole investigation, then, we must say that the author's conclusions regarding the relation between time spent, method, age, nationality, heredity, home environment, maturity, the personal equation of the teacher and spelling efficiency, are inadequate. At best the conclusions are suggestive and tentative. Probably the most surely founded is the one concerning the relation between time spent and spelling efficiency. The precise solution of these problems is a task for later investigators.

The investigation offers little of direct, positive value to pedagogical theory and practice. Its greatest and, indeed, its monumental service to education must be that it raised questions and stimulated experimentation and criticism of existing practices.

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WANDERING SCHOLARS

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The wandering scholar of the later middle ages is a normal product of his time and environment. His mode of life was an outgrowth of several phases of earlier medieval life and requires indeed a special explanation only if one fails to strip away the intervening centuries and gives reign to the tendency of interpreting the past in terms of our present social, moral and intellectual milieu. Looking at our modern conveyances and locomotive facilities we are inclined to think that never in the world's history was there a time when travel was more widespread and a greater factor in education than at present. As historical research, however, slowly illuminates the dark pages of the past, it becomes apparent that this notion is a superficial one. History seems to point to the fact that the true age of traveling was at the close of the middle ages in what is known as the period of the renaissance. It was then that travel really meant education, not a mere pastime but a serious factor of life.

Quite early in Church history we meet with the wandering priest. Complaints against this class of the clergy are found as far back as the beginning of the fifth century. At that time Synesius, bishop of Ptolemais, alarmed by the growing tendency of the clergy toward a wandering life in preference to a settled living, attempted to stem the tide by obtaining a decree which prohibited the consecration by bishops of any priest who did not have the care of a parish. But in spite of numerous injunctions this class of the clergy continued to increase until at the time of the crusades, the *clerici vagantes*, as they were then called, came to be recognized as a permanent body. The pilgrimage, and later the crusades, had given a moral approval to a temporarily followed wandering life and led to its extensive adoption among the lower orders of the clergy.

The crusades also were largely responsible for that spirit of unrest that manifested itself as a general feature of the life of the late medieval centuries not only among those moved particularly by religious motives but among all classes of society. As a characteristic of the chivalric orders the trait is familiar to all. The wandering salesman and the traveling merchant are well known figures of an age in which commer-

cial correspondence, bill-brokers, and the varied forms of modern business life existed but in embryo. The craftsman, on the road with a purpose of improving his skill and discovering new methods and new wares, is a further illustration. Among the prosperous merchants the mere pleasure of traveling, and incidentally perhaps the desire for a temporary relaxation from rather rigid moral and religious ideals, if not practices, prompted many a one to adopt for a time a similar mode of life. Curiosity and the wish to acquire a more intimate knowledge of diverse manners and customs were frequently, then as now, motives joined to the former. To the man of learning, finally, owing to the scarcity of books, travel was a matter of necessity and, like the merchant, moreover, he often spent the greater part of his life in carrying his intellectual wares from court to court. But nothing perhaps gives us a better idea of the extent to which travel was carried on in that age than a glance at the rapid diffusion of the art of printing which, as Jacob Whimpheling tells us, not only converted all the towns of Germany, small as well as large, into intellectual workshops, but established itself by the aid of German printers within a few years in Italy, France, Spain, and even in the far North. At the end of the fifteenth century Rome alone is reported to have counted no less than 190 printing presses attended by German printers, while in the whole of Italy there were over 100 German printing establishments. In France and, according to Lopez de Vega, in Spain the spread was almost as rapid and assumed the same dimensions as in Italy. Printers from Cologne established the art in England and Holland. It was carried to Denmark and Sweden, Hungaria, Constantinople, and a Nuremberg physician tells of having met German printers even in the unhealthy island of St. Thomas.

An influential factor in the development of the wandering habit among students (which yet survives as a university tradition with the Teutonic peoples) was the relatively late foundation of universities in Germany. When the earliest universities came into existence Germany was too far behind the rest of Europe in culture and civilization for universities to develop spontaneously, and when the time of artificial foundations had arrived its political dissensions did not favor such an experiment. Hence, for two centuries the university movement affected Germany by drawing away its students to foreign institutions. Migration also was rendered necessary by the fact that the early universities were highly specialized and, last but not least, it was greatly encouraged by the reputation of individual teachers who attracted students in quest of particular knowledge from near and far. German students

thus abounded both in France and in Italy. It has been estimated that from 1289 to 1350 the average annual membership of the German nation at Bologna alone amounted to 250 students. The earlier German students at foreign universities were for the most part young men of noble birth and well born or well beneficed ecclesiastics, which probably accounts in part for the exceptional privileges they enjoyed at Bologna and elsewhere. Later came the less well-to-do, and last the poorer classes in such numbers as to exceed their representation in modern university life. Poverty was no disgrace, begging no dishonor, in an age in which charity was regarded as the highest duty of the Church. The establishment by the higher clergy of colleges and burses for poor students supports this point of view.

The earlier motive for the attendance of foreign universities was, as a rule, supplied by the aspiration to one of the higher clerical offices, and the causes which were drawing German students to Italy later on are, of course, not hard to find. The new spirit of the renaissance, by passing over the middle ages and going back directly to antiquity, was revolutionizing the intellectual world. Italy became imbued with it long before the rest of Europe had awakened to its influence. Italian scholars were the first to see the ancient world in its true light, being enabled to do so through a study of its classics from a literary point of view rather than in an endeavor of finding allegorical explanations of Christianity. The Italian universities, moreover, were then eminent above all others. Philosophy, natural science, medicine, civil law and Greek, elsewhere almost unknown, flourished at Padua and Bologna. Then again, travel, as pointed out above, was to the man of learning a kind of inner necessity. He was actuated by ideal rather than material considerations. To-day the transfer of activities to foreign countries, even by physicians and the Catholic clergy, is an exceptional proceeding, for a thousand ties bind the man of education to his country and his people. During the period in question it was a common thing. To the country of his birth and its people the man of learning was essentially indifferent. He clung to the Church or his science, or both. For this Church and science were the same everywhere. And wherever he went he found Latin, the universal language of the learned. Numerous biographies of men of renown of that age furnish us with an abundance of data concerning the unsettled mode of life of the learned of that period. One concrete example will serve to more firmly establish the fact: A man whose life, better perhaps than any other, gives us a vivid picture of the custom of his time,—a wandering scholar in the best sense of the term. If he

happens to be a German, that is due to the fact that among all the nations the German scholar was the traveller par excellence. And if his name is Rudolf Agricola, it is because the well known fruits of his life of travel best demonstrate the import for their age of this type of wandering scholars.

But not all the learned of the age of humanism were of his class. Entirely distinct from the more earnest, dignified, scientifically solid humanistic type as represented by such men as Agricola, Reuchlin, Erasmus, and others, were the so-called poets or orators. In forming an idea of such a poet one must not be confounded by what the term implies in common parlance of to-day. He is to be pictured rather as a man, well acquainted with the works of the ancient authors, who knows how to comment upon them and to recite and write, in poetry and prose, after their style. Rendering material in verse, as is well known, was an essential part of the Scholastic curriculum. This was continued practically by the poets with the difference that a purer language supplanted the Barbarian Latin of Scholasticism. They may thus be said to represent a unique phenomenon in the German world of learning and one which since then has never re-appeared. The youths of the *Sturm* and *Drang* period, the romanticists and the nationalists, who in other respects somewhat resemble them, lack the didactic element which goes here hand in hand with the poetical.

Poets, though usually of the laity, nearly always adopted celibacy for the simple reason that the ties of marriage, like everything else that in any way resembled constraint, were distasteful to them. Their special mark was their extreme restlessness.

“Ex diverso multi convenimus,
Quo logices fons erat plurimus;
Sed discedat summus et minimus,
Nam negatur quod hic quaesivimus.
Tort a vers nos li mestre.”

“Aus allen Ländern kamen wir an,
Wo die Quelle der Logik am stärksten rann;
Jetzt scheide von hinnen jedermann,
Weil keiner sein Ziel mehr erreichen kann.
Denn Unrecht that uns der Meister.”

Thus they sang. And from place to place, from school to school, from university to university they wandered. One reason for their unsettled life, perhaps the principal one, was their poverty. A genuine poet, we are told, a Conrad Celtis, Hermann Buschius, Ullrich von Hutten, or Helius Eoban Hessus, was always hopelessly in debt and obliged to appeal, time and again, to the liberality of his more fortunately situ-

ated humanistic friends, in an effort to escape serious difficulties. The logical consequences of this state of affairs were the development of a certain lack of principle and a somewhat low moral standard generally. Though resorting, from a sense of delicacy, to the make-shift of cloaking their appeal for a loan in the poetical garb of Latin verse, some of them, it would appear, were not above selling for filthy lucre the products of their Muse. It is told, for instance, of Buschius that he did not think it improper to deliver to the clergy of the diocese of Cologne an oration in which he exalted the superiority of Scholastic theology and its representatives,—to write an epigram for a disputation by one Arnold von Tungern (most cordially hated by all humanists), in which he characterizes Reuchlin as champion of the Jews and violently attacks the university professors of Cologne, whom he accuses of loving money better than the Muses,—only later to, what was to be expected, play himself off as one of the most enthusiastic followers of Reuchlin and the enemy of all Obscurants.

On the other hand, there are on record also ludicrous instances of their poetic pride as, for example, the case of Conrad Celtis who, having written, in the obvious hope for a tangible reward, a panegyric on the city of Nuremberg, was awarded by the council of that rich city the munificent sum of eight gulden, only to return them as being below his dignity to accept. When, after revising his work, he is later offered twenty gulden, he retains the money but even then does not think it necessary to write a letter of thanks.

Not to elaborate further, the essential characteristics of the poet are ever the same. On the moral side of his make-up, a libertinistic incoherence of life which hides nothing and makes no apologies and, on the mental side, the exaltation of the new culture combined with a thorough contempt for the antiquated sciences and their representatives, from his point of view, both the marks of a freer spirit,—that, in a nutshell, is the wandering poet.

Leaving the poets we encounter a class of wandering scholars who moved in much lower strata of society. The traditions of this type were formed during the twelfth and thirteenth centuries when the wandering clergy, the *clerici vagantes*, became identified with them. The chief cause of their coming into existence was probably the privilege of safe conduct granted to travelling university students which was peculiarly liable to abuse by the idle and vicious. The latter in time became dreaded fixtures of the life of the country (as students in university towns sometimes do now) and came in for severe criticism on account of their free habits of life

and their liberal views. The contemporary monk Helinaud writes of them as follows: "The scholars are accustomed to wander throughout the world and visit all the cities; and their many studies bring them understanding; for in Paris they seek a knowledge of the liberal arts, of the ancient writers at Orleans, of medicine at Salernum, of the black art at Toledo, and in no place decent manners." The last criticism was undoubtedly well deserved for it was this trait which by some writers is believed to have later given them their class name and stamped them as a well defined body, a sort of corporation. Its membership was drawn for the most part from the younger clergy and those in the minor orders who, while claiming all the privileges of the clergy, were willing to accept few of their responsibilities.

The common meeting place of all was the new institution of learning, the university. Here the students in permanent residence incorporated as the Nations, the constituent units of the earlier universities. A smaller number, who preferred the wandering habit as a permanent mode of life, strengthened their fraternal bond by swearing allegiance to a titular Magister, one Golias, by some believed to have been a nickname of the famous Abélard, more probably, however, a hypothetical personage, but the rule of whose customs was certainly something more than a mere shadow. And so also was the brotherhood. The typical goliards* were the more riotous, unthrifty and unambitious,—men of some little university education, of depraved tastes, who were hangers-on of the higher clergy, wandered from one palace of an ecclesiastical lord to the next one, or made use of their character of traveling students for the purpose of deriving alms from the charitably inclined, more especially the parish priests whom occasionally they aided in teaching and in other duties. A second class, because of their more permanent abode, were called *locati*. The line of demarcation between the two, however, was not very distinct since their pleasures and their vices, their songs and their literature, were those common to all wandering scholars of that time. Through their attempts at poetry chiefly, but also by accounts of a few contemporary writers, we are enabled to catch glimpses of their habits and their general mode of life. Most of their songs were frank protestations of the pleasures of drinking, gaming, and love in many phases, whose order of desirableness seems to have been such that advice to refrain from "wine, woman and song" might possibly have been followed to the extent of dispensing with the singing.

* It has also been suggested that the term is derived from *gula*, and indicates their gluttonous and intemperate habits.

In the second half of the thirteenth century they had become so intolerable a nuisance that decided opposition to them grew up among the clergy. Many of the bishops and abbots ordered them to be met with cudgels instead of alms. Toward the end of the century the Church authorities prohibited the parish priests from aiding them in any way and pronounced heavy penalties in case of disobedience. Being thus cast off by the clergy and at the same time separated from the laity by the immunities of their clerical character, their status sank rapidly and below even that of the minstrels of the secular nobility.

Though checked for a time by vigorous measures, the vagabond scholars, nevertheless, were by no means suppressed. They reappeared in the following centuries chiefly, perhaps exclusively, in Germany, in large numbers and in various forms, being known then as *vagantes* from their roving mode of life or more frequently as *bacchantes*, meaning followers of Bacchus, the God of wine, and applied to them because of the vicious conviviality of their habits.

In the earlier ones of these *scholastici vagantes* we have to do with a not essentially new type of wandering scholars. Their habits and customs closely resembled those of the goliards. This is indicated by the poems which have come to us from two of these *vagantes*, Johannes von Nürnberg and one Nikolaus who calls himself "Archipoeta." They appear to have been a queer mixture of character, jolly, eccentric, extravagant, dissipated, shabby and beggarly, on the one hand, and then again arrogant and proud. Their chief aim of existence is a life free from care. Wherever there is something to be had for nothing the vagant is sure to be on hand. He revels in plenty to-day and starves to-morrow. His greatest enemy is the winter-time, but even then he knows how to help himself. Were he unsuccessful during the day in obtaining food and tired from wandering about, he falls back on his last resort. He approaches some pious man, sings to him his songs and begs until kept over night. Nor does he despise to endear himself to the waitress at the inn when there is a prospect of obtaining food and drink or possibly a resting place behind the stove. But with the advent of spring, bird of passage that he is, the town knows him no more and he escapes into the sheltering wings of the green forest.

For a living he has recourse to all kind of subterfuge from work. He appears as healing artist, astrologist, interpreter of signs and dreams, treasure-locator, actor, juggler, miracle-worker, in short as king of confidence men. Sometimes he impersonates a musician and singer, in which case he is known as "lyrant" after the instrument that he carries. As a rule,

however, he is up to some trick entirely out of the ordinary. He calls himself master of the seven free arts, pretends to come straight from the Venus mountain and to be endowed with peculiar powers. An old pamphlet by an unknown writer, printed about 1510, entitled "*Liber Vagatorum*," refers to this class as follows: "They are beggars or adventurers, dressed in the gray coat, coming from Frau Venus mountain, knowing the black art and being called wandering scholars. The same, when they enter a house, then they begin to speak 'here comes a wandering scholar, of the seven free arts a master, a conjurer of devils, against hail and weather and all kinds of misfortune;' after that he will murmur a few mystic words, cross himself two or three times and say 'wherever these words are spoken nobody will be stabbed to death nor will any accidents happen to them here or in any part of the land,' and many more such artful words. And in time folks begin to believe that it is so and are glad that he came and, having never before seen a wandering scholar, they will say 'such and such a thing happened to me; if you can help me I would gladly give you a gulden or two.' Then he will say 'yes' and begin the experiment. And there is nothing one can ask on which he is unable to experiment, that is to say, to fool you and cheat you of your money. Conclusio: Of these *vagantes* beware! For the tales which they tell are nothing but a mess of lies."

Of so-called wandering necromancers, who posed as healers, Johannes Pauli writes as follows: "Time ago wandering scholars went around the land who deserved a knitted cord around their neck; they were great deceivers. Of these one came into a house in which was a woman whose eyes pained her. He spoke to the same woman 'should she give him a gulden, then he would hang a letter on her neck so that none of her eyes would ache any more as long as she carried it; nor should she show it to anybody.' The woman was glad and gave him the gulden; the scholar gave her the letter, sewed in, and hung it on her neck. The woman carried it some years, perhaps three or four. But once, when she went to confession, the priest asked her if she had no superstition. She answered that she had been given a letter; how she carried many sacred names on her neck, for painful eyes. And the priest would not absolve her unless she allowed him to read the letter. When he read, then he laughed. And when the woman asked why he laughed, he read aloud so that she could understand. And there it stood: 'May the hangman put out your eyes and the devil spit into the sockets!' The woman did not want to believe that such was written in the letter and took it and carried it to three or four other persons.

Then, of course, she had to believe it. Angrily she tore up the letter,—and then her eyes began to pain her again.”

A writer named Bernhard Ochini tells of a kind of wandering scholars, called “*ceretans*,” whose specialty was to take advantage of people’s credulity in religious matters. “A *ceretan* or wandering scholar travels about,” he writes, “who proclaims to know a prayer of St. Gregorio which has so much virtue that, as often as he speaks it, a soul is redeemed from hell;—but first he must be given a gulden.” Or again, “there was a *ceretan* or wandering scholar who came into a town and announced that he had power to save souls from purgatory, and who received much patronage from those anxious to redeem them.”

Nearly all writers on the subject of wandering scholars mention the Venus mountain and the mastership of the seven free arts. One believed in that credulous age, it would seem, that in this mountain feast followed feast, tournaments alternated with grand balls, hunting parties with banquets and with all possible kinds of amusements; that it was a place where one rode, raced and revelled, danced and caroused, lived, lazed, and loved. Of several mountains which were thought to have been consecrated to the goddess Venus the so-called Hörselberg near Eisenach is best known, being linked with the name of the noble Ritter Tannhäuser. In one of these Venus mountains the wandering scholars claimed to have been and they knew how to picture everything therein at great detail and in glowing colors.

The mastership of the seven liberal arts, according to popular belief, could only be obtained in a so-called devil’s school. In these schools the devil was said to sit at his desk in human form and to discourse on various sciences such as physics, mathematics, mechanics, theology, jurisprudence, medicine, astrology and magic. The hearers were not permitted to write down anything during the lecture nor were they allowed to ask questions of their black professor. One among many of these high-schools of the evil one was believed to have been located in the city of Salamanca in Spain, in the Street of St. Pollo. In a corner house of that street is a large cave in which magnificent palaces with superb rooms and gardens are to be seen. In these, once upon a time, the devil was supposed to have kept school. Seventy students were admitted to his course in the black art but on the condition that the last one to go out should be his. Similar places were believed to exist in France, Finland, and elsewhere.

In the course of time the *scholastici vagantes* were wholly absorbed by a type of wandering scholars already mentioned, the *bacchantes*, which now became prominent, “masters with

their bands of boys," through histories of education best known of all. The elementary teachers at that time were, as they have too often been in later days, largely recruited from the failures in other callings. Many were engaged only for brief periods of time, were miserably but probably adequately paid for their inefficient services and, when dismissed, wandered from place to place in search of employment. They were a poor, despised and too often immoral class. In addition there were lusty young fellows with coarsely roistering manners who occasionally did some teaching in the schools of cities that offered an ample if modest means of subsistence. Certain cities, because of special advantages, seem to have been particularly honored by their presence. Breslau alone is said to have harbored several thousand at the beginning of the sixteenth century. In Ulm they were so numerous at that time that the city was nicknamed "Grandis Bacchantria." Documents of the city of Frankfort, on the other hand, mention the presence of *bacchantes* but once, and that in the year 1480.

The *bacchantes* perfected begging to a fine art. The city of Breslau was divided by them into sections and one of these assigned exclusively to scholars who had attached themselves to certain schools. In this section they enjoyed a monopoly. In Nuremberg a similar division was made but, in addition, the pupils of each school were divided into groups of ten, each group taking its turn to do the daily begging. Two members of each group carried large baskets of a capacity of perhaps two or three bushels, each one of which was adorned with a picture of the patron saint of their school. When filled, they were carried back to the school and there the spoils were distributed. (Cuts of these begging students with their baskets are still preserved.) The custom of taking entire schools upon singing tours throughout the city, as a rule on evenings before a holiday, afforded another profitable source of income. In some cities in which large numbers of these scholars were in constant residence, in Nuremberg for instance, the city council attempted to control their customs by ordinances.

Bacchantes permanently connected with a school were called *locati*. This presumably was the stage striven for and reached only by the older ones who had shown ability to teach in the municipal and guild schools. To most of them, however, the pleasures and the easy life of wandering proved a greater attraction than did the honors and responsibilities of a fixed position in a school. They preferred teaching in private families for brief periods or sometimes took charge of young boys not yet in their teens, ostensibly to teach them, while wandering, the rudiments of knowledge, in reality, however,

for the purpose of having the boys provide them with food from day to day.

These boys form an additional class of wandering scholars, quite distinct and quite numerous, called A. B. C. *Schützen* or shooters. The term refers to the elementary nature of their studies and to their method of gaining a livelihood. The latter consisted of indulging in the half-authorized or at least tolerated custom of securing by theft domestic fowl which they managed to capture by throwing stones. It has been suggested that there is probably some connection between this sixteenth century custom and our expression "teaching the young idea how to shoot." Of the life led by these fags, traveling about, begging and stealing for their brutal *bacchantes*, we have a good account in the auto-biography of Thomas Platter, a shooter who later gained distinction. Tired out by long marches, beaten by the master for failure to bring in sufficient food or by the farmers when caught stealing, starved sometimes to a point where the gnawings of hunger would induce them to snatch a bone out of a dog's mouth, getting the worst of it at every turn, the life of a fag was certainly not an enviable one.

The progressive changes in the school system wrought by the influences of the reformation put an end to the wandering scholars, at least of this type. Owing to the great diversity on the part of the older institutions in their attitude toward the new learning many students continued to follow a wandering life. The term *bacchant*, however, was soon restricted to students about to enter upon a university course, the "*beani*" or foxes, around whom centers much that was objectionable in the university life of that time. Their so-called "deposition," a forerunner of the modern custom of the badgering or hazing of freshmen, assumed finally such extreme forms as to require intervention by national legislation in order to bring the students under control. But by that time the wandering scholar in the medieval sense had almost ceased to exist and the term was applied to a heterogeneous type.

His spirit, nevertheless, has never quite disappeared and is still latent, particularly in Germany, as we know. Even in our own case it happens that we listen to a lecture at Clark in the morning and in the afternoon attend a clinic in some other town. Indeed, in view of the proximity of some of our universities, Columbia and Yale, Harvard and Clark, not to mention many other pairs, it would, by the aid of electricity or steam, be quite feasible to attend lectures in one institution in the morning and in the other by noon. One boards a car or train and travels on,—wandering scholars of the most modern type.

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THE TEACHING OF CURRENT EVENTS

By CHARLES E. McCORKLE, Clark University

Little has been written upon the efficient teaching of current events. It is a field of recent development and as yet is somewhat in the experimental stage.

In the majority of cities where current events are taught, the teaching is very inefficient and of little practical value. This fact was conclusively shown when the answers to the questionnaires on "How to Teach the War" * were classified in regard to one of the questions, *i. e.*, "How are Current Events Taught in Your Schools?"

Out of one hundred and nine cities only seventy-eight were found to be teaching current events. From these seventy-eight cities, a choice of twenty-one was made because of the tone of more efficient teaching in this work. Full information was requested and replies were received, some stating in full and some in part just how and in what grades current events are taught.

The following reports are representative of the most efficient work along this line:

Office of City Superintendent, New York City.

"— principals and teachers have their own method of doing this work. Programs of two schools will give you a clear idea of what is being done.

IN A BOYS' SCHOOL

The Direct Method

1. Compositions.
2. Discussions and debate in class and assembly.
3. Reading, newspapers, magazines, clippings, etc., in class and assembly.
4. Visiting parks, museums, exhibits, etc., to see things of current interest.
5. Pupils are given credit for keeping scrap books of news items, pictures, etc., on topics of current interest.
6. Classes have bulletin boards for current events.
7. Some important event is put on the board each day.
8. Some classes subscribe to a paper called "Current Events."

The Indirect Method

As far as possible such subjects as lend themselves thereto, as, history, geography, dictation, arithmetic, drawing, science, etc., are correlated with important current events.

* See *Ped. Scm.*, March, 1915, p. 1.

IN A GIRLS' SCHOOL

Time

About a half hour weekly, in connection with history, geography, or oral composition.

Grades

Beginning formally at 4A.

Sources

Daily newspapers, the small paper, "Current Events," "World's Work," "Literary Digest," magazine sections of some of the Sunday papers, magazine articles.

Methods

Conversation: Free discussion between teacher and pupil. Reading to class by pupil or teacher followed by discussion. "Current Events" read at home; later discussed in class. Map study of localities mentioned in events under discussion.

Bulletin boards kept on which clippings and pictures of current interest are posted and taken up later for class discussion.

Discussion of items of neighborhood interest introduced by pupils, i. e., local celebrations, public works affecting the immediate vicinity, elections, etc.

Moral issues involved in questions under debate brought out and discussed.

Occasional talks from the platform at morning assemblies, sometimes used as subjects for compositions.

To maintain interest and insure that the work shall be followed up:

1. The children are given credits for research-reading up and bringing into class topics for discussion.
2. Teachers are required to note in progress books points of current interest taken up during the month."

District Superintendent Gertrude E. English, Chicago, Ill.:

"It was my good fortune to act as chairman of the Survey Committee on History and Civics. In going about from school to school, I found many instances of the teaching of current events in an admirable manner. From my recollection of the matter, I have selected eight representative people. I am asking each to write you in regard to his or her method of presenting the subject of current events. . . . In a situation so cosmopolitan and varied as that of Chicago presents, the treatment differs widely in the different localities. I have endeavored to give you representative people from widely differing districts."

Mary B. Livingston, 8th Grade, Farren School, Chicago, Ill.:

"Previous to this year, I have planned the teaching of Current Events in a different way from that which I have planned this year. Last year the children had a little paper called "The World's Chronicle" in which I assigned topics or the children asked about certain topics in this paper, these we took in class for discussion.

"This year we are 'trying out' a new course of study. I decided to teach Current Events without any prescribed paper. I did this with fear and trembling but I have found the interest even greater than formerly. Part of this can, undoubtedly, be explained because of the exciting nature of the European news.

"At the beginning of each history period any child who has a picture or a cartoon shows it to the class and explains it. If I consider these very good, they are pinned in the bulletin board. Often the child may wish to ask about his picture or his cartoon, etc. I have the children bring clippings from the newspapers which he reads

or tells about. I prefer the child's own presentation but ask him to bring the original article because he often makes mistakes in his interpretation.

"I try to work Current Events back into history and vice versa. For instance, the child who told about the discussion in Congress over the War Tax, was not sure how the tax bill was to become a law, so we turned to the constitution.

"In studying the Mexican War, the recent events in Mexico were brought up and compared with those that happened during the war and previous to it.

"In September, the children brought all kinds of news items to class but they show greater judgment in their selections. They certainly are interested in the topics of the time and are learning to handle the newspapers better than I had hoped at first."

Florence I. Wood, Head Asst., Sheilds School, Chicago, Ill.:

"My pupils are nearly all of foreign parentage and from homes in which they hear little or no discussion of Current Events, thus making it necessary for the school to do something for them along this line.

"I have no set period for the work, but make it a part of the History or Geography lesson; occasionally, some topic of special interest is discussed during opening exercises.

"I usually keep several topics on the board; local, state, national, world-wide. I try to interest the class in whatever is occupying the attention of thinking people.

"Items which the pupils find in papers or magazines which they think bear on our topics, they bring in. Of course, many of these articles are useless, but I try to lead them to discriminate between important and unimportant news items. Nearly all in my room subscribe for a little paper called 'The World's Chronicle' which they read with pleasure and profit, and in the matter of discrimination as before mentioned. I find this paper most helpful. To begin with, the 'news' in it is extremely well selected, and then I usually ask my pupils to report the three articles which they think are most important and they are expected to tell why they think so.

"When Congress is in session, we follow important legislation. Registration Day, General Election Day, Fire Day and numerous other 'Days' furnish topics. The Panama Canal is a 'continued' story from week to week, and since the European War, the Kiel Canal has taken on new interest.

"I make a point of talking about proposed local improvements as for instance, the New Station about to be built. The fact that it would give employment to a large number of men appealed to some.

"Our geography is from a commercial point of view, and without dwelling on the 'horrors of war,' we have been able to arouse much interest in sources of supply cut off by the war, and the efforts of manufacturers to find new sources. 'What to do with our Cotton?' 'Why have we no merchant marine?' 'Contraband Goods' and other questions of the present movement are being considered.

"I encourage pupils to bring clippings that especially interest them and then we talk about them. If it is some cartoon, some map, some heading of particular interest, it finds its way to a bit of space on the walls of my room that I call my bulletin board. Sometimes I have the pupils put them in their note-books. That is about all the Current Event work I do during the First Semester. I am simply breaking ground for the next term.

"During the Second Semester I do my most independent work. Once a week we have Forum Day. This is our clearing house. All

manners of modern problems are discussed. I teach my pupils to have respect for one another and each one is entitled to a hearing. Broadness of mind and careful judgment are inculcated. Debates are held, reports are given that require some amount of research work. Just yesterday one of my lads told me that he is going through every branch of our Health Department, preparatory to giving a report on its work. Another boy gave a most interesting talk and answered questions on 'Merchant Marine.' We have followed with bated breath the work of the 63rd Congress, we have an eye on the men who represent us. How excited we were last Tuesday, election day! My pupils feel that they are missionaries for stirring up civic interest in their own homes and in their community.

"Last year we made three charts that are original—one a study of all the courts found in Chicago, and we are well 'courted' here, another an election chart, and third, a diagram of the Rise and Fall of Political Parties. The pupils enjoyed this work very much.

"Last of all I am like Mr. Squeers in Nicholas Nickleby, who told the boy who had spelled the word 'window' to go wash it. I take my classes on trips. We visit the City Council, we go to the courts. Federal Judge Landis is such a great help to me and is very much interested in what I am doing. We see 'Chicago first.' We attend political meetings, we meet candidates, in short we have our finger on the pulse of modern life."

Annie McClements, Burr School, Chicago, Ill.:

" . . . To me, history is living politics, and great events of the past are valuable only as they concern the present and influence the future.

"When Congress was revising the tariff downwards, we followed the tariff from the days of Washington down through the administrations of John Q. Adams, Jackson, and McKinley to the present time.

"The establishment of the Federal Reserve Banks and the fight in Congress to do away with our old rigid limitations on the extension of credit, were studied in connection with Hamilton's Financial Policy, Jackson's war on the United States Bank, Panics and so forth.

"The battle for suffrage for women, Child Labor Laws, State Regulation of the rate per mile charged by railroads, were brought under the States Rights problem.

"Germany's reported preparation to invade Canada because that country had furnished troops to England, and England's threat to hold the United States responsible for the furnishing of supplies to Germany's war vessels by the countries of South America, were discussed in connection with the Monroe Doctrine.

"The terrible foot and mouth disease that came home with such force to Chicago, was used to show the duties of the departments of the Cabinet.

"We are always on the watch to keep in touch with the world around us. It is wonderful how many items are found in the papers by the live pupils—that are just in line with the things we are studying. I have them get the news direct from the papers because I prefer my information uncensored and unexpurgated."

Asst. Superintendent A. H. Hill, Richmond, Va.:

"In our high schools we devote one-half hour each week to the subject in each of our classes using selections from the daily papers and special Current Events papers. The various topics brought up are discussed and relative values brought out as far as possible.

We have several periods devoted to illustrated talks by the use of the balopticon and the post cards. The one I have in mind was delivered in German by a teacher who spent the previous summer in Europe. In the elementary schools we proceed as above, and in addition we are securing the Pathé films for use in our moving picture machines. In any recitation the matter is again brought directly home to the pupil by references to current topics. In the night schools we have an optional class, largely attended, that is held once a week at 9.30 P. M.—the close of the regular session."

Superintendent John R. Wilson, Paterson, N. J.

"All grammar schools subscribe to the weekly magazine 'Current Events.' One copy is provided for every two pupils in the grades in which it is used. One set sometimes answers for several grades. A definite time is given this work on the classroom program. The paper is read and discussed by the pupils as a class exercise in much the same manner as the geography lesson is conducted. The teacher decides the order in which the items shall be read and makes whatever application can be made to the other studies of the pupils. These magazines are supplied by the Board of Education without expense to the pupils. The expense is charged against the account for books and stationery."

Superintendent J. H. Phillips, Birmingham, Ala.:

"The teaching of Current Events in the Birmingham Public Schools is as follows.

"In most of the grades, definite periods each week are devoted to the teaching of current events. As a rule, this forms part of the 'Opening Exercise' period.

"A number of the schools subscribe regularly to the 'Scientific American,' 'Literary Digest,' 'Collier's Weekly,' 'National Geographic Magazine,' 'Leslie's Weekly,' and 'The Youth's Companion.' In addition, the daily papers are regularly used.

"The aim seems to be to inform the pupils regarding the events of current interest, and at the same time to teach them to discriminate between what is really worth while and what is purely sensational or positively bad.

"I quote the following regarding the method of teaching current events from the statements given to me by principals and teachers:

"Children bring clippings from newspapers which they read aloud during opening exercises. These are often discussed by class."

"The Class subscribes to 'Current Events' which they read regularly,—sometimes using it as a reading lesson."

"A written paragraph on 'The Most Interesting Article in the Daily Paper' brought excellent results one day this week."

"In the upper grades, children are encouraged to give complete reports rather than separate or disconnected facts."

"The natural interest and information of a number of newsboys in our class is made use of."

"The European War very naturally has been the principle topic, especially in connection with the work in history and geography. Many of the rooms have large maps on the wall."

"Our Seventh Grades are organized into literary societies and meet once every two weeks. Debates on current topics, as well as a study of current events, constitute an important part of each program. These have proven very helpful."

"There is a general agreement among the teachers and pupils that no events that result in murder are suitable for discussion."

"In one room, the children have collected pictures of the leading characters participating in the European War, together with data bearing on the operations from day to day. These are all arranged in a school scrap-book."

"In another class, the period was given over to a discussion of the spread of the cattle disease so widely discussed in the recent newspapers. A few days previous, the teacher had told the pupils where they could find information regarding the different kinds of cattle,—those raised for milk and butter. Pupils had also informed themselves as to the states that lead along these lines."

"Current events are correlated with reading and composition in our Seventh Grade. One reading lesson each week is given over to newspaper items which the children select, read aloud, and criticise. Once a week, the open period is given to written composition based on current events. Children write on the board one paragraph, sometimes this is a reproduction lesson, sometimes a headline is furnished from which the paragraph is developed. In addition to this, there is usually one oral lesson per week. In this, much geography and history are taught. On the teacher's desk are to be found occasional copies of Leslie's, Collier's, and the World's Work; always the Independent is there. These magazines are eagerly read by pupils, if the teacher is not unduly diligent in requiring full resume of articles read. The three topics most frequently stressed are the Great War, the recent legislation, and national politics."

Superintendent A. N. Cody, Flint, Mich.:

"... teachers especially, in the upper grades devote one recitation each week to this subject and incidentally many topics are discussed at other times during the recitation of this subject of current events. Pupils feel free to bring any material found in their general reading from various sources and the question of Geography and History plays an important part in these discussions. Then again, we use in grades seven and eight a text entitled 'The Community and the Citizen,' published by D. C. Heath & Co., which is very suggestive for discussions, and now since the terrible war is on, we draw many conclusions and direct the discussion toward peace movement, and comparisons are made with reference to the cost of war as compared with the maintenance of educational institutions, to say nothing of the terrible loss of life. It is difficult to give you a real picture of what we are doing but I know that we are accomplishing much in the subject of current events."

Superintendent H. B. Wilson, Topeka, Kansas:

"In a number of schools, in the upper grades the teachers and children have been keeping an up-to-date war map. The data for this map they have secured from the daily press and from the Little Chronicle, which is supplied by the Board of Education for the use of all grades above the fourth in all schools. These Little Chronicles are supplied in quantities of about twenty-four each weekly. This number is used by passing them around from grade to grade. They are kept in permanent files for reference. In some schools I found a reading table has been provided where other approved things than the newspaper and the Little Chronicle may be preserved. Considerable use I found has been made of the issue of the World's Work. In the upper grades of all the schools I found that the interest and enthusiasm over the war had been made the basis for a study of the strong and weak points commercially of the nations at war. I did not find in any school that notebook work which is permanently preserved was being done."

Superintendent A. F. Ames, Riverside, Ill.:

"We devote one or two periods each week to Current Events in the primary grades, in charge of one teacher. Certain subjects are selected by the teacher and treated in a general way, for instance: the subject two or three weeks ago was 'The Christmas Ship,' to which our School contributed, and this brought in the question of railway transportation. During the present week the subject has been 'Elections,' and the children have been asked to find out at home what is going on, what questions are being voted upon, and their attention has been called to the new element of women voting. This is the first year we have done this systematically in the primary grades, and the children are taking a great deal of interest in reporting and discussing the news. The teacher feels that it has increased their interest in reading, and emphasizes the fact that one purpose of reading is to gain information. They often bring clippings, some of which are well worth while.

"In grades 5, 6, 7, and 8 pupils have in their hands 'Current Events' to which they devote one $\frac{3}{4}$ period each week. In addition to the interest in the subject itself, a motive for the work is found in the fact that newspaper reading is a task awaiting the pupils as they grow older, and their initiative and training in judgment are developed in selecting the articles most worth while reading. In this they are required to defend their position."

The outlines and methods of teaching current events in the cities just given are most commendable and worthy of careful consideration. As was previously said, these reports are the best received and have been selected because a combination of the best features of each into one outline and method of instruction, adapted to the needs of the particular city in which it is used, will be of great value to the progressive teacher. Because of the varying conditions in different cities, it would be folly to make an outline and to designate a method of teaching this important work. Sufficient outlines and methods have already been stated in the quoted reports. The desire is to make more emphatic the value and importance of this work that has already been given, and to stress as much as possible the need of devoting more time to current events and to practical vitalized methods of teaching that have a new educational evaluation of the subjects taught.

A definite iron-clad method of doing things, a departure from which is unpardonable and which makes mere machines of the teachers and children, is most abominable and should not be tolerated by the citizens of any city. Yet there should be an efficient system of doing things which is pliable and adaptable each hour of the day, if necessary, to any change or need that may arise in order to meet the definite goal of any school or school system. There is a desire here to condemn the extreme "clockwork and machine system" that too many superintendents, supervisors, and principals are compelling their teachers and children to undergo. In some places this is so severe that one can almost hear the wheels begin to

grind with the ringing of the school bell for the hour to begin, and this lasts till the children are sent to their homes. This method of teaching without the individuality, originality, interest, enthusiasm and the many other features that go to make up the live teacher, is certainly a great pedagogic crime, not only against the teacher but the children as well, for a loss of time and opportunity to children should certainly be recognized as such.

The other extreme that should be more harshly condemned than the severe machine method is the lack of system. To conduct a school without any plan, method, aim or goal is most pitiable, for by this procedure there is a lack of proper mental and physical discipline. Merely doing is not enough.

The system that is to be encouraged is the one that finds the "golden mean" between the above two extremes. The aim, goal and result are the important features in this system. The clock work is not a necessary feature. Of course every teacher should have a daily program and should outline her work in advance for each lesson every day, but there are times when deviations are necessary, because there are "psychological moments" in school-life when five minutes more time in a recitation will mean more than one hour the next day.

There are many good features in the reports of current events teaching from all the cities given. New York has an excellent outline for instruction which seems to be all-inclusive. Also, there seems to be attached to this work a very estimable evaluation. However, it would be very desirable to know the amount of time that is devoted to this work, the originality, individuality and enthusiastic interest that the teachers and pupils show, and whether the aim, goal and results are sufficiently impressed upon the children.

The summary of the reports of the Chicago Schools indicate the enthusiasm and the interest of the teachers, the importance attached to current events teaching and the results the teachers are accomplishing. Little machine work is found, but great responsibility rests upon the individuality, interest and results of the teachers. There is a tendency to break away from the "old methods" and an endeavor to meet the practical needs of real citizenship, not only in understanding the present by touching the problems and interests of the pupils in their homes, districts, state, and nation, but also by viewing them in the light of past history and progress. A new educational evaluation of subjects is taking place. This is a most encouraging situation even though it is more of a mental attitude than a real situation, for if so much importance is attributed to this teaching and its practical value is so great, why is there so little time devoted to it in comparison with other

subjects, some of which, nearly all educators maintain, are not important?

The current events work that is now being done should not be spoken of lightly, and it is not in the spirit of destructive criticism that the above is written. From these reports it is possible for supervisors and teachers who have regarded this work as of little consequence, to formulate outlines and methods, and to establish aims and goals that will be commensurate with the value and far-reaching results of this, one of the greatest subjects that can be taught not only in the elementary and secondary schools, but colleges and universities as well.

As an illustration of practical criticism, let us consider briefly the current events course in Nashville, Tennessee. Here ten minutes (usually more time) are devoted to current events,—four thousand words from grade 3 B through 8 A with not only the spelling but meaning and use, are learned. The results to be derived from this teaching are,—

“(1) To train the pupil so that in after life he shall be able to know important events of general interest from those of mere local weight, transient value, and less worthy appeal;

“(2) To strengthen the impressions gathered from the regular texts by this additional viewpoint;

“(3) To furnish a practical and permanent field for the application of facts learned in his daily texts, and for the enlargement of that field in after years;

“(4) To add interest to his schoolwork, to sharpen his insight and intellectual ‘attack’;

“(5) To cultivate his ability to express in good oral English a full, spontaneous, and accurate account of what he has read with interest;

“(6) To open for the teacher an avenue for inculcating many principles of morals, patriotism, initiative, civic pride, etc., which might not emerge from the formal daily recitations.”

Furthermore, a study is made of the recent war, “inventions, hygiene and sanitation, advancement in medical science, social betterment, politics, municipal affairs (especially of our own city), etc.”

It does seem that if all the above are the purposes and scope of this study, it alone would nearly fulfill the requirements of an efficient school system, to say nothing of all the other work,—and only ten minutes one day a week. There are nearly five days remaining, would it not be better to say, let these five days help out the ten minutes rather than to say the ten minutes, the five days?

However, it makes no difference what the nature of the criticism is, or who makes it, the Nashville School system has ascribed a great value to the teaching of current events which it is wise enough to see, and has set up an aim and a goal toward which it is striving, all of which could be followed

with safety by the majority of superintendents in this country who are foolish in their own "intelligent ignorance" of what constitutes a real elementary and secondary education. No doubt Nashville is accomplishing a great work along this line and her results are most remarkable. The greatest possible criticism is, more time should be devoted to any course, than is being devoted in Nashville, no matter what the subject is, that does for the pupils what the course in current events does for them in Nashville.

The commendable features of the reports quoted are,—the value and real worth of current events teaching are recognized by all; the zest and spirit in which the work is done and the intensive interest of the majority of pupils testify to the great results accomplished in spite of the small amount of time devoted to the work; the outlines they have designated and the aims and goals set forth when put together, give the true aim and method of what should constitute good teaching in this work; and to conclude, if the many superintendents who read these reports and the work of these cities quoted, instead of criticising would do as efficient work with current events as these, they are to be congratulated.

It does seem that more time than is now used in any city might be well used in the teaching of current events and of the things that are of practical value and of vital interest in our modern life. This will require greater classification and systematization of the work. No doubt, this will mean a change in our manner and method of teaching. And, whether we correlate current events with other subjects or whether we teach it as a subject by itself, it matters but little. But we should desire from this instruction, the development on the part of the pupil of the desire to read, to criticise and judge relative values of material read and so on. In other words, a pupil properly taught and versed in current events and the reading of daily newspapers, has the same ability of practical values and good judgment in that domain, the same as the trained teacher who has had the practical training and experience of being trained to teach under a competent supervisor and critic teacher. Furthermore, in addition to the correlated teaching of current events with all school subjects, the importance of current events teaching may be safely considered of so great a value by all superintendents that one period will be devoted wholly to this instruction each day by every teacher, at least, from the fourth grade on through the high school.

The real defect of present instruction and subject-matter in the majority of the city schools is well summarized in the following statement of Dr. Frank McMurry ("Elementary School Standards"),—

"But one may also judge the quality of instruction chiefly in terms of the activities of the pupils. In that case we ask: What are the children doing? Are they setting up objects of their own? Are they pointed and forceful in their responses? Are they selecting facts according to value? Are they exercising initiative in their study?

". . . The explanation is that teachers, supervisors of teachers, and authors of books on teaching have been so intently observing the procedure of the teacher that they have overlooked that of the pupils. Yet the center of gravity of the school lies in the pupil; and what he finally does determines the value of all the teacher's efforts. He, therefore, should be the primary object of consideration, rather than the teacher, and the quality of the instruction should be judged mainly in terms of his activity."

PROBLEMS OF NORMAL SCHOOLS

By JOHN ALDEN HANCOCK, State Normal School, Mankato, Minnesota

The growing demand for larger efficiency and economy in educational institutions and systems is leading to further study of this group of problems. It is a group constantly increasing in number and importance. Success demands concerted effort, but will be less difficult to attain because of the special purpose of the normal school.

Each of these schools has an individuality easily discernable in its graduates. This is conditioned upon the personality of the executive and staff, their standards, and their point of view of their field of work. No complete list can be given since they vary with time, place, and the individual, but disposition, qualities of person and character, lines of ability, ideals of life, and scholarship are included.

How the school is to render the largest service to the state will differ with place and time. It requires keeping in close sympathetic touch with the constituency of city and county superintendents, graduates, and people. Ways and means for becoming well and favorably known over its contributing territory must be devised. With its laboratories, its libraries, and its experts with larger training and relative permanence of position it can take up the current educational problems and test them out to better advantage than can be done elsewhere in the state. The best results are not obtained by extreme policies of any kind.

The standards for graduation are often more or less vaguely in mind. There are instructors who insist that their work is limited to "teaching" their special subjects. This is to throw away many opportunities for valuable service. All of the training should converge in leadership and its development in the student. The need for it is imperative and foremost whether one is to be a class teacher, in charge of a department, or of a school, or of any institution. It includes power to grasp situations accurately, to see what should be done, and to develop thought, enthusiasm, earnestness, and persistence in securing results. It means skill in winning, organizing, and directing the work of the individual and group. It calls for uniformity of disposition, for initiative, judgment, resourcefulness, and self-reliance. Everyone coming in more or less daily touch with the student has opportunity to help develop and measure the qualities and powers concerned. Somewhere in the course the student himself should make a study of leadership.

In the great majority of instances the student's ideals and point of view of life call for no radical reconstruction. The two years of graduate work will as a matter of routine do much toward further growth and development. The most difficult group to train is composed of young women whose homes have so carefully shielded them from meeting difficulties and responsibilities. Socially they have been advanced beyond any attainments and worth of their own. They have not been taught to control their likes and dislikes to any great degree. It has been forgotten that daughters need skill and power to deal with their problems, which in time as are numerous as their brothers. A disheartening struggle often awaits such students if they "make good." The point of view of life must be changed. A truer

valuation of self has to be developed. Many of the group make excellent teachers. Others are eliminated—and appear later in the commercial college or church finishing schools.

A very interesting group of students is made up of earnest, genuine, nervous, "bright" young women. Their present welfare as well as their future necessitates some change in their point of view and in learning how to conserve their powers. They are very likely to overwork and are subject to many minor ailments. Careless or incompetent management of them to any degree throws them into the care of the nerve specialist for an indefinite time.

Overloading teachers is common in many localities. Few young women know how to protect themselves from this. The responsibility for the breakdown of the teacher's health is often the board's and superintendent's, and frequently her own. Three months' vacation is often necessary for the teacher to fully recover from the strain of nine months of work. To require early in the graduate course the study of hygiene and sanitation would probably not be a mistake. Housing in dormitories where supervision could be maintained by dean, nurse, and school physician counts for much. Requiring the young women to wear a prescribed uniform which includes protection for arms, neck, chest, and feet would help to establish health and check against the inroads made by the follies of fashion, wilfulness, and example. Men like Gulick have done much to expose the dangers of the medicine habit to which young women easily fall a prey. It is difficult to help students to appreciate the dangers, both mental and physical, to which nervousness exposes them. Certainly teachers have a right to their health but many of them do not develop much of an interest in it till its loss is threatened.

Allround sanity and success in dealing with school and community demand a keen sense of humor. This has often been crushed out or left to chance for its development. It remains to be determined how the serious, earnest, and often very religious young woman can be helped to develop this sense. Fortunately American people have had such teachers outside of school as Mark Twain, but "Tom Sawyer" is still banned from many homes and public libraries.

The point of view of religion in normal schools can not be left out of consideration. Protestant, Catholic, and Jew are all present. Which, in past centuries, has been most intolerant of the others is difficult for the student of history to say. In theory neither one is guilty. The faults of those long gone times were of the entire people. It is necessary to cease muck-raking the past and to begin to get acquainted with each other and with each other's point of view. Charles Lamb's remark that he could not hate people whom he knew is true of students and teachers also. Instead of stirring up trouble in the courts over the question of reading the Bible one or more days a week in the schools, suppose we give attention to the beliefs we have in common and to the resources of music, literature, painting, history, architecture, and psychology for solving the problem.

Ability to plan to meet the needs of the members of the class, or of the school, has already been mentioned with leadership. Making imitators of students is to invite failure. Both analytical and observational power is involved, the former to enable one to see the details of the situation before him, and the latter for noting the tendencies and habits of its dynamic elements. Power of this kind is involved in every other calling as well. It is a power to be called forth by the work of each instructor and here again are opportunities for judging of the fitness of the student for the work of teaching.

How can it be determined for what grade or grades the student should be specially trained? In the country school she must deal with

many if not all grades. There she has much need for a clear understanding of primary work. But the normal school student rarely is willing to teach in the country if she can help it. It would take more than two years to persuade her that it is much less than a calamity to have to work there. Fortunately the requirements for many grades overlap. Standards for dealing with this problem need much study and are very debatable. All critic teachers ask for the brightest of the student body for their work. Perhaps the most complex problems are presented in the primary and grammar grades.

Where should the student do her "practice" teaching and how much of it? Conditions in city and country schools are often so different from those presented for the test in the normal schools. Would not some combination of present methods be a great advantage? Locating the graduate where she can succeed from the first, keep her health, and grow professionally requires a large knowledge of people and conditions in contributing territory.

Who are unfit for the work of teaching? This question has already been answered in part. There is danger of being arbitrary concerning standards. Some students lack in force, due usually to health, some are wanting in ideals, and others are deficient in mental power. Certainly the problem is one that may well take the time of faculty meetings. In justice to both the unfit and the school the decision should be made at an early date. By the first half or two-thirds of the year the decision can be made by the coöperation of the teachers concerned with the work of the student. It may well be doubted if the student poor up to that time, ever rises much above mediocrity in teaching. She ought not to be inflicted upon childhood.

Should other than graduate courses for high school students be offered? This has been answered in both affirmative and negative. High schools develop now well and now poorly. Their teachers, principals, and superintendents change very frequently. The quality of the work done varies accordingly. There is a value in normal schools maintaining junior and senior high school courses in which the most promising ideas can be tested out for the suggestion of the high school workers and for standardizing their work. The larger experience and training of the normal school staff would make these courses of much service.

The organization of the graduate work is of necessity somewhat arbitrary. With increasing numbers of students pretty much every subject in each course must be offered each term or semester. Each subject is taught independently of other subjects offered at the same time, and is not of necessity in any immediate relation. The mental effects of this are disintegrating. Education should contribute to mental unity. Herbart saw this clearly a century ago, but we are yet far from organizing courses of study as they ultimately need to be. Perhaps the solution can be helped by faculty discussions of each instructor's work. Unity in the faculty could be promoted as well as unity for the common result,—the equipment of the graduate. The specialist left to himself is likely to become warped and moody and to lose his enthusiasm. He certainly needs to have his balance and proportion preserved as much as do the students.

It has long been customary to offer courses in "review and method in common branches." In practice this has resulted in very much review and very little method. Method, having been over-emphasized at one stage in the history of normal schools, is now frowned down by very many. We shall some day reach the saner medium as usual. The instructor's reason for so much subject matter is "that students seem so ignorant of his subject." And yet the incoming high school graduate received her training in these branches from normal

school graduates in all probability. Emphasizing subject matter has been the policy for more than a generation but improvement in ability to deal with the "common branches" does not seem to increase if one may believe what he hears. Does not this demonstrate the need of a new point of view and a reconsideration of these branches? Ought not these courses to deal with the psychology, pedagogy, history, and hygiene of each branch? Sufficient review of subject matter would in all probability be secured incidentally by this policy. After six or more years of study of any given subject in the grades and four years of further growth and development in the high school, power in these branches ought not to be so little in evidence. Would it not be well to find out just what the difficulties are? Why should exactly the same amount of time be given to each branch? It is an easy way of disposing of an administrative problem, but no one pretends that their values are the same, or that these values foot up the same in amount. History, geography, and drawing are growing fields of knowledge, but that can not be as true of arithmetic or grammar. A careful investigation of this entire problem would be well worth while, otherwise we shall shortly have the same outcry against arithmetic and grammar that is now raised against algebra. Its critics are assuring us that it has actually no value whatever. Again it is the complaint and point of view of the extremist.

Two points of view of fields of knowledge have grown up. One of these regarded each field as, if not complete and finally organized, to be completed and then transmitted to posterity in that form. There have been few philosophers who have not tried to say the final word. It is not surprising that emphasis should be placed upon proof as the final culmination of thinking power. However much this point of view has been discredited much of the current practice in teaching persists in the effort to leave the subject as complete,—finished. This results in fixing habits and in checking readjustment,—in other words checking or preventing progress. So rapidly do conditions of life change that readjustment of habits of many kinds is quite necessary. No field of knowledge exists but is growing through the solution of its problems, and the solution of those of to-day raises more for to-morrow.

Texts have devoted much space to discussing ways and means for the formation of habits of thought and action. The equally important problem of keeping habits under control, of modifying and changing them, and how they relate to scientific method has received little treatment. The importance of this to progress finds illustration in the frequency with which invention and competition have wrecked a trade or a business. The history of every body of knowledge details explanations once sufficient, guiding laws and principles that can no longer guide, superstitions that were once science, mythology that was once good theology, and so the possibility of final systems does not exist. Present day conditions and institutions of all kinds are the results of long periods of growth and development and must be understood as at best but relatively temporary. Reconstruction, reorganization, readjustment of the old to meet the needs of the present and future are in constant demand. Can teaching help develop this ability?

Systems have been organized after one has met and solved the problems of his field of work. They have come through growth and must always be held subject to amendment. Slavishly adhered to they lead to stagnation and the loss of enthusiasm. The fossilizing of an able faculty may come about so slowly as to be imperceptible to those in the midst of it. It is a real danger to which the best

are exposed. The fossil can not always be disposed of at will. He has his friends who will help him fight for his existence. It is better to keep the fossil alive and growing. He is rarely unwilling. The solution of this problem together with that of faculty harmony lies in developing an interest in the growth of each member's field of work. There is nothing so stimulating as research and discovery. The faculty member needs for this the stimulating and sympathetic council of the executive, the opportunity for reporting and discussing his results with his colleagues, and publishing his results for the benefit of the school's constituency in the school bulletin. Encouraged to be always a learner, he will realize better what confronts his pupils and how to deal with their difficulties. How to teach has been the great theme of many educators. Emphasis is now changing to the inquiry, how do children and people learn? Teaching is to be modified accordingly. This theme is not alone one for study in the classes in pedagogy and psychology; it raises the whole problem of keeping the entire faculty in touch with the scientific teaching of their subjects. The development and application of scientific method is not confined to the "sciences." Its application to other fields whether in primary or what not stages of growth is imperative for progress.

Can we ever arrive at scientific "marking systems?" Do we need exact marks,—percents directly or indirectly? Perhaps the improvements in the Binet-Simon tests may be the solution of the problem. Thus far the best efforts in marking have had to be more or less arbitrary. Any measurement of ability must determine power to grasp situations, to analyze them accurately, to observe accurately the forces at work in the problem, to utilize past experiences for any suggestions, laws, or principles serviceable in dealing with them, and if necessary to generalize a new guiding theory for overcoming the difficulties confronting one. If the candidate is a normal school student, power not only to hold attention on the topic at hand, but also to divide attention and to deal with a number of things, is important. How many possible grades should there be? Is "passed" or "not-passed" sufficient? If three or four or more grades are determined, e. g., "A," "B," "C," "D," and "E," just what should the value of each of these be? To say that each may be expressed in terms of percentage is to evade the question. Judgment concerning these problems needs to be thought out.

The relation of the academic and the training departments is frequently artificial. Where the executive is the immediate head of both departments more satisfactory relations have existed. This has meant that he does less clerical work and has a larger office force. His personality being the most important one in the institution, as well as the most influential, should be the one most deeply impressed upon the graduate. This result is further secured where he is in personal charge of some class in which he meets all of the seniors often enough to know them well. His personal acquaintance with them in the training department and class room will add largely to the value of his judgment in locating them for their future work.

Other problems there are in large numbers but the ones so much needing large study are those bearing on problems of teaching and learning,—the great purposes for which normal schools have been built.

THE FUNCTION OF THE TRAINING SCHOOL

By GEORGE H. SHAFER, State Normal School, Fairmont, West Virginia

Pedagogical literature has become so voluminous in these days that it is impossible for any one to keep up with it, and yet one of the most vital problems seems to have been almost entirely neglected. In going over this literature one seeks in vain for anything like an adequate treatment of the problems of the training school. This seems to indicate a lack of interest by educators in general in an institution which is of the utmost importance in the administration of education. One would think that, at this time, when vocational training is in the forefront of educational thought, the idea of a training school for teachers should no longer need to be defended, yet one reads with a feeling of chagrin the almost pathetic plea made by the head of the department of education in one of the most prosperous state universities in this country for the training school whose existence was threatened by the failure of the board to appropriate funds for its maintenance.

Years ago it was possible for a medical school to be maintained in isolation from large centers of population where there were no hospital and clinical facilities, and it was possible to do this with the entire respect and confidence, both of the medical profession and of the public in general, but the last twenty-five years have wrought a great change in this respect. Our concept of an efficient medical training has passed through a rapid process of evolution. Many of the smaller medical schools, even in cities of from one to two hundred thousand population, have gone to the wall because their graduates could no longer hold the respect and confidence, either of the medical profession, or of an increasingly intelligent public; and to-day it would be a scandal to maintain a medical school without an abundance of clinical facilities. But this is only a simple illustration of the operation of a fundamental principle which is applicable to training in every profession or occupation which involves both science and art. Law schools make much of moot courts, and that law school which is located in a large center, where many varied and important cases are disposed of, is indeed fortunate. A department of agriculture in a college or university without a farm would be held up to ridicule; an engineering school without machine shops and mechanical appliances would be almost unthinkable, and the time has come when the idea of a normal school without an adequate training school is just as ridiculous as the idea of any other professional school without its appropriate laboratories and clinics.

Psychology teaches us that it is the function of the nervous system and especially of the cortex to connect sense organ with muscle. Evolution teaches us that the very structure of the cortex has been built up as a result of the demand to make this connection. The end of knowledge is action, and until the pathway between impression and expression has been opened, knowledge cannot be vital. It is the sensation that returns as the result of the act that clinches knowledge and makes it vital. The first demand upon the organism is a demand for action. Historically, art comes first. Science grows out of art, and in turn culminates in art. There is a great difference between

knowing about a thing and knowing a thing. In the classroom and in our reading we learn about things. In the clinic, on the farm, in the shop, in the training school, we learn the things. Real knowledge gives confidence, ability, assurance. Mere knowledge about things leaves us timid, uncertain, and halting. Of course, it is true that knowledge about things will help us in gaining knowledge of things, but the first in order to function economically must be simultaneous with, or must follow closely the second; in other words, science, if it is to function economically in art, must come in when the need for it arises. If the science of teaching is to culminate in the art of teaching, if student teachers are to gain a knowledge of teaching as well as a knowledge about teaching, and this is to be done efficiently, the science and the art of teaching must go hand in hand. Here, then, we find the principle which not only justifies but demands a training school for every normal school and for every department of education in college or university. But such a training school, if it is to meet at all adequately the demands here indicated, should first be a *normal* school with *normal* pupils, under *normal* conditions.

In dealing with the individual student teacher the ultimate end of the training school should always be kept clearly in mind. The ultimate end of the training of teachers is the education of the children of the State. The supreme concern, the conclusion of the whole matter, is the welfare of the child. The school exists for him; the entire machinery of elementary education exists for him, not only for the child of the immediate training school, but for the children of the State; so that it is the function of the training school, not only to unfold the individual capacities of prospective teachers in line with the most approved practices and to inspire them with something of the ethics of school craft, but in conjunction with the other departments of the normal school to detect and to eliminate the unfit. The training school ought never to tolerate any individual as a student teacher whose influence, whether because of mental incapacity or moral perversion, or for any other reason, would be likely to jeopardize the welfare of the children whose education a normal school diploma would give him a permit to direct. This needs emphasis, because in the training school we are dealing with the individual student teacher at close range, and in our interest in his immediate success, it is sometimes difficult to keep in view the proper perspective. And this elimination of the unfit cannot in any sense be regarded as a hardship to those who are eliminated, for in this respect the training school is acting in accordance with a function that is common to all schools, namely: to help the student to discover himself, and to shunt him from a course which would mean an expensive and ignominious failure for himself and a double loss to the community.

Again, the training school should perform the function of balancing the theory of the educational department by practice. One of the severest struggles of all sciences in their evolution has been to get away from a closet philosophy, and later on to gain their independence of the sciences from which they sprang, and upon which they are compelled to draw largely for their guiding principles. Now the science of education depends for its guiding principles upon biology, sociology, and psychology, but the principles of these sciences cannot be applied to the teaching process without adjustment. Our inferences from the sciences must at every point be tempered by practice. Pedagogy must establish its own principles. Other sciences may suggest lines of advance but the ultimate principles must be wrought out under actual school conditions. Where pedagogical theory is worked out in a college or normal school department of education

which is not in close contact with actual school conditions, there is the almost invariable tendency to develop extravagant and dogmatic theories, which are so ethereal that they are absolutely disconcerting to the individual who comes into actual contact with real conditions. It is partly for this reason that prospective teachers in the past have often derived very little real help from their undergraduate professional courses. Such young people have gone forth from our institutions convinced of the simplicity of the problems of education, inspired with the zeal of the reformer, and confident in their own kind of theories, only to find their cherished theories breaking down, one by one, under actual conditions, and disillusioned, they have thrown up their hands and have asked with the skeptics "Is there a science of education?"

It is very well for us to conceive ideal conditions. We must occasionally stand on the hilltop and look into the promised land. We recognize fully the significance of ideals; we must have them to make progress possible, but we must be sure that they are ideals which it is possible at some time for real beings, under real conditions, to realize. It is very well for one to hitch his wagon to a star, but it is also well for him to keep up a rather intimate communication with mother earth, at least until he is quite satisfied that he is ready to put on the garments of white, and cease to be an immediate contributor to the world's progress. There is no safer way for an educator to keep his bearings than by constantly checking up his theory under actual school conditions. This idea is fully appreciated in other professional schools. The medical school seeks the most successful practitioners to fill its chairs, and expects them to keep up their practice. The law school seeks the lawyer who is right in the forefront in practice, because these men are each day brought up hard against actual conditions, so that the function of the training school is not only to train student teachers, or to work out theory in practice, but also to keep heads of educational departments from severing their cables and swinging too far into the realms of the unknown.

The training school should give a certain tone, a certain standard, to the educational work of the community and of the district for which it exists outside of the direct influence which comes to the work of the trained teachers which it sends out. It may be expected that the training school should embody in its equipment—its buildings, its playgrounds, its gardens, its hygienic appliances, its library, its reference books and materials for teachers, as well as in its curriculum and methods of teaching, safe standards to be followed. It should be progressive so far as to incorporate in its material equipment the most effective modern appliances. Its course of study and methods of teaching should constantly check up with the biological, sociological, and psychological principles of education, as corrected by experimental pedagogy. This last requirement demands a well equipped corps of critic teachers and supervisors. With this equipment, the training school will command the confidence and respect of the district, and will be bound to effect the tone of every single school within its territory.

I have now pointed out in broad outline four general functions of the training school:

1. The training school is a laboratory for the initiation of student teachers into the art of teaching, by giving them actual practice in the light of modern theory, and under the guidance of skilled teachers.
2. The training school should assist the student to discover his own aptitudes and to find the place where he can most fully realize himself, and it should eliminate those who are manifestly unfit.

3. The training school should perform the function of keeping educational theory well balanced, so that there may be the least possible loss in the application of theory to practice.

4. The training school, by setting up professional standards and by keeping abreast of the times, should be a source of inspiration and of helpfulness, and its influence should be manifest in the tone of all educational work throughout the district which it serves.

BOOK REVIEWS

Jewish Life in Modern Times. By ISRAEL COHEN. N. Y., Dodd, Mead and Co., 1914. pp. xiii + 374.

Mr. Cohen's work on "Jewish Life in Modern Times" is by far the best exposition of the inner life of the Hebrew race that has been written up to date. The style is pleasing, the attention of the reader is held to the very end, facts and figures are presented in lucid form, and the wealth of detail which is set forth makes this book truly scholarly.

At times it seems as if we were under the personal direction of a guide who leads us through the Ghetto and shows us every phase of Jewry, even to the smallest item. Now we are in the kitchen of the Jewish housewife where we observe her going about her intricate duties; now we are in the Synagogue where we attend divine service; or we watch the Jewish father perform the many rituals peculiar to his religion; or we sit at the bed-side of the dying Hebrew, and attend his funeral in solemn love and reverence. And all this is presented so skillfully and in such a scholarly manner that we may well declare, without exaggeration, that Mr. Cohen's work forms a permanent contribution to the literature of races.

The book is divided into seven parts. The first is devoted to a "General Survey," while the rest take up the "Social," the "Political," the "Economic," the "Intellectual," the "Religious," and the "National" aspects of the Jews, in the order named.

Jewish life, we are told, is extremely complex, for although it is fashioned by religious observance it is also diversified by political forces; and these latter are far from being homogeneous as is the former. Nor should the political forces be minimised. For it must be remembered that the thirteen and a half million Jews are scattered over the entire face of the globe, where their destiny is subject to the social pressure of the people in whose midst they live, and this pressure is directly proportionate to the ratio by which those people outnumber the Jews.

The Jews of any land reflect the culture of their adopted country, but when that culture is base and crude, as in Russia, they entrench themselves in their religion, and cultivate the Talmudic Laws and traditional customs. And though the Jews of Western countries are modern in life and thought, they manage to preserve enough of their own characteristics to insure the security of the race. The basis of the Jewish community is public worship, which, to be held at all, demands the presence of at least ten adult male members. The secret of the continuity of Jewish life is to be found in the gregarious instinct of the Jews. Were it not for the communal spirit with which they are so strongly imbued, they would not have been able to resist the disintegrating forces of the dispersion—forces which have been in operation two thousand years.

"Jewish life in the eastern countries has all the intensity and distinctiveness of the life of an independent nation" (p. 34). They have their own language, their own literature, their own holidays, and even their own fashion of dress. Two other features that distinguish the Jewish community of the East from that of the West is the homogeneity and the poverty which characterize the former. Moreover

the Eastern communities are cramped and delimited by law; the Western spring up voluntarily. These latter also contain two kinds of Jews—the native born,—they whose ancestors settled many years ago; and the foreign element,—people who constantly immigrate from Russia, Rumania and Galicia. The Ghetto in Eastern countries is a sign of political oppression, in Western lands it is the outgrowth of the poverty of the immigrant Jews. As soon as the Ghetto dweller has improved his material condition he moves into a better neighborhood.

The family is the basis of Jewish strength and union. It has been hallowed by holy Writ, and the Biblical command, "Be fruitful and multiply" has been carried out scrupulously in all Eastern communities. In the West, however, the size of the Jewish family has greatly diminished.

The chapters on the external and internal features of Jewish home life abound with a wealth of information. They should be of particular interest to students of sociology.

No race possesses more average ability, thrift, industry and application than the Jews and yet no race is more impoverished than they. The reason is to be found in the remorseless persecution to which the Jews are subjected in Eastern countries. Yet the spirit of union is so firm in these people that the well-to-do Jews have adopted the most modern methods for the relief of their poor brethren. Indeed, Jewish philanthropy is international in its scope. "The most important distinguishing feature of modern Jewish philanthropy," says the author, "is the solicitude and munificence devoted by the Jews of the West to the aid of their harried co-religionists of the East" (p. 85).

Jewish morality forms an important chapter in any work. In this connection the writer presents statistical data proving that the rate of criminality in Jewry is lower than among the general population. Moreover, Jewish criminality, such as it is, is largely determined by economic conditions. This is demonstrated by the nature of the crimes. The majority of them belong to such categories as fraudulent bankruptcy, the evasion of Sunday laws, or military service in countries like Russia and Germany. Very few are the crimes of violence committed by Jews. Though the Jews of Russia form 4.13 per cent of the total population they contribute only 2.97 per cent of the criminals in that country. In Hungary they form 5.02 per cent of the population and contributed only 3.36 per cent of the total convictions for the period of 1906-8. Similar figures obtain for Germany, England, France and America. The figures presented certainly justify the author in concluding that on the whole "the delinquency of the Jews consists mainly of breaches of the laws and regulations governing the business pursuits in which they are engaged, and generally corresponds to the ratio by which they are represented in them. It . . . is eminently free from the vice and brutality that account for the grossest crimes in the world of human iniquity" (p. 98).

Since the animus of the book is to prove that the Jewish race is on a par with the best of civilized races, that it ought to be kept intact, and that its preservation can be accomplished only by saving it from the disintegrating influences of modern times—influences that make themselves felt in such forms as intermarriage, apostasy and a declining birth-rate, one would expect the author to show that the Jews possess that element which alone is able to preserve the unity of a race, namely, a self-sufficient social life. This he fails to do. The fault, however, is not his. The fact is that Jewish culture and tradition make no provision for a self-sufficient social

life. And this is more responsible than anything else for the falling away of the young from the faith of their fathers.

Turning to the political aspect of the Jews we find that the Russian Government still has the distinction of being the hellhound of persecution. The bondage there consists of laws which rob the Jews "of all liberty in the choice of domicile and occupation." The Pale of Settlement to which the Government banished the Jews in 1769 has been narrowed more and more each year, so that the tightening of the "iron ring" from without and the instigation of pogroms from within has made the six million Jewish inhabitants veritable victims of the Pit and the Pendulum. The small percentage who are allowed to dwell in any part of the empire is confined to discharged soldiers, merchants of the first guild, university graduates and licensed mechanics. But none of these are permitted to retain their grown-up children with them unless they too belong to one of the four classes.

The fate of the two and a half million Jews in Rumania is no better. There, too, they are subject to much hardship. Though the Jews in Germany enjoy civil liberty, they are still exposed to discriminations which are the more painful in that the victims belong to the intellectual and therefore more sensitive class of people. The system inaugurated by Frederick William III whereby every apostate was rewarded with a bonus of ten ducats "is continued in another form by the German Government to the present day, for no Jew can aspire to a position in the civil service, or to an ordinary professorship in a university, or even to a commission in the army" until his blemish has been washed away by the waters of baptism (p. 295). The Jews enjoy full civil liberties in England, France, Italy and America. In these countries they have contributed many eminent men to public service. A rich list is given.

Jews are found in every occupation and profession. If the number engaged in business is altogether out of proportion it is due to the fact that nearly half the total number of them in the world are forbidden to enter the field of agriculture and to pursue the liberal arts. Mr. Cohen shows clearly that the enormous wealth with which the Jews are credited is purely fictitious. The fact is that the vast majority of them, especially those in Russia, Rumania and Galicia are steeped in abject poverty.

The section devoted to the intellectual aspect of the Jews is very rich and up-to-date in information. The author is of the opinion that there is a distinct Hebrew literature. The only drawback is the lack of a universal language. This defect can be remedied only by the establishment of an autonomous government in Palestine. A historical and critical analysis is then made of great Jewish writers, dramatists, poets, historians and artists. The contribution of the Jews to general literature, to journalism, philosophy, science, mathematics and medicine, as brought out by Cohen, shows them to be a really gifted people. Here, too, the author displays a wide range of information, though it must be confessed that his acquaintance with eminent American Jews is not as wide as it might have been.

The religious aspect, beginning with an exposition of the organization and administration of the Jewish Church, passes over to the forms of faith and methods of observing the Jewish ritual. There are very few sectarian differences. Indeed, there are only two forms of Judaism—orthodox and reformed. The fundamental distinction lies in the fact that the orthodox Jews still entertain the hope of a return from exile, whereas reform Judaism "proclaims that Israel is not in exile, . . . but that he has been dispersed to discharge a mission, to spread the principles of truth and justice and to be a model of righteousness unto all the nations of the earth." This doctrine,

declares the author, "stands in ironic contrast to the situation in Russia, where the Jews have been settled nearly two thousand years and have shown greater fidelity than their brethren to their faith, but have not made the least impression upon the moral perversity of their inhuman rulers" (p. 287). Incidentally Reform Judaism comes in for a just scathing at the hands of the writer. "That the Reform movement has failed to arrest the decay of religion in Jewry is a fact that will readily be admitted even by its leaders," he declares. In this respect I think Mr. Cohen is quite right, for it is still a question whether Reform Judaism is not after all a stepping stone from Judaism proper to Christianity.

The author finds that the drift from Judaism that is now going on throughout the world is one of the most disquieting features of Jewish life. This gives rise to the Jewish problem. The mere granting of civil liberties to the Jews will lighten the material but not the spiritual burden of Israel, for statistics show that precisely in those countries where Jews enjoy a comparative large number of such liberties they desert their faith in greatest number. England, Germany, Italy and France furnish a larger proportion of Jewish baptisms than cruel Russia. The all-impelling motive of this apostasy is the desire for equality of opportunity in the competition of life. Hence thousands of Jewish parents in Germany baptise their children in infancy in order that the latter may find their road to worldly success unimpeded by the prejudice of anti-Semitism (p. 301).

Naturally this gives rise to an interesting sociological problem: what effect is such wholesale proselyting—spiritual prostitution, we might say—apt to have on the moral tone of the nation where it is most in vogue? Does not the man who changes his heavenly faith for a worldly end show himself thereby to lack something in the moral gear? If one can set aside ones ancestral obligations with no qualm of conscience does not that pave the way for the subsequent setting aside of living obligations in the interest of the selfish ego? Mr. Cohen does not discuss this. We hope somebody will.

At this point the work narrows down to the dual proposition: assimilation or conservation. The Ghetto has been the conserving force in times past, but with the spread of intellectual emancipation even the Ghetto is breaking down as a conserving power. There is only one solution to the problem, therefore, and that is Zionism. To this plea the last chapter of the book is devoted, and though the reasoning pursued here, as throughout the whole work, is calm and scholarly, it nevertheless fails of convincing. But this is a minor matter. The book contains excellent illustrations and a good bibliography.

Hartford, Connecticut.

G. A. FEINGOLD.

The psychological methods of testing intelligence. By WILLIAM STERN. Translated from the German by Guy Montrose Whipple. Baltimore, Warwick and York, 1914. pp. x + 160.

The value of this translation can hardly be overestimated. Although the monograph originally appeared in 1912 there is nothing of more recent date which gives such a logical, concise discussion of the problems of intelligence testing. At the same time the author's style is such that the lay reader readily finds orientation in this field.

The question of the nature of intelligence is first treated and the author finally resolves it into "general mental adaptability to new problems and conditions of life." Keeping this concept in mind he next shows that single mental tests are insufficient for diagnostic purposes and that what we need is test series which must be wisely selected. They must also be such that particular findings can be

united into one resultant value which will show the grade of intelligence. The two methods which are most promising Stern feels to be the Age Gradation Method of Binet and Simon and the Method of Rank Correlation of the Pearson School. Each has its advantages and disadvantages.

Stern then analyzes the Binet-Simon tests carefully, emphasizes the necessity of proper technique, discusses the various methods of expressing mental age and suggests the use of a "mental quotient" which is the ratio of mental to chronological age. Then follows a comprehensive survey of results so far obtained by the use of the scale. Comparisons are made for nationality, sex, environment and class as differentiating factors. The correlation between pedagogical age and mental age is also carefully analyzed and shown to be negative. The work on defectives indicates that they finally reach a state of complete mental arrest. The significance of a certain amount of retardation differs at different ages and for an evaluation of this difference the author again advises the use of the "mental quotient." Finally he takes up the possibility of reorganization and improvement of the tests themselves and suggests the use of parallel series.

The method of Rank Correlation can be applied only in those cases where we are dealing with a relatively homogeneous group. This is in distinct contrast to the heterogeneous groups which may be handled by the Binet-Simon scale but the results obtained by the Rank Correlation discriminate much smaller differences in intelligence than is possible by the use of the Binet-Simon scale. The correlations of the rank order of subjects on various tests can be worked out easily and accordingly, as the correlation is high or low, it is assumed that the capacity operative in the tests depends upon the common factor of general intelligence. Stern points out that too complete assumption of this theory may lead to the use of a group of tests so closely related that they test but a small portion of the general intelligence. Therefore a criterion of the tests must be sought in the teacher's estimate. But the teacher's estimate itself must be controlled and verified. Only when two independent ratings made by the same teacher upon the group of pupils have a high coefficient of correlation can the series be used as reliable. The correlation between school rank and estimated intelligence is also dealt with but the indications are not promising.

The discussions, although somewhat neglecting important studies made in this country, raise most of the questions which are still confronting workers in this field, criticize the various contributions justly and open new avenues for future investigation. One regrets, however, that none of the author's investigations are reported in this monograph.

Clark University.

FLORENCE MATEER.

BOOK NOTES

The earth; its life and death. By ALPHONSE BERGET. Translated by E. W. Barlow. New York, G. P. Putnam's Sons, 1915. 371 p.

The chapters are on the birth, age, form, magnitude, mass, movements of the earth, gravity, rhythmic movements of the crust, deviations of the vertical, seismic phenomena, magnetism, radioactivity, rhythm of oceans, tides, waves, circulation of the earth, marine and atmospheric, displacement of the pole, pendulum measures, the attack and defense of the continents, the old age and death of the earth.

The modern city and its problems. By FREDERIC C. HOWE. New York, Charles Scribner's Sons, (c. 1915). 390 p.

This work contains twenty-four chapters, the chief of which are the city, ancient, mediaeval and modern, American, the city and the state, municipal home rule, the charter, municipal administration in Germany, Great Britain, its relation to the public service corporation, municipal ownership, city planning here and in Europe, police, fire, health, the city as a social agency, the housing problem, recreation and leisure, the budget, new sources of city revenue.

Commercial education in public secondary schools. By F. V. THOMPSON. Yonkers-on-Hudson, World Book Company, 1915. 194 p.

The author treats present conditions in education for commercial life, school organization and teachers, the general high school and commercial education, three investigations and what they mean, constructive proposals, commercial high schools and commercial courses in high schools, with an appendix containing letters from New York business men and illustrative material used in the Boston investigation.

Dramatization: selections from English classics adapted in dramatic form. By SARAH E. SIMONS and CLEM IRWIN ORR. Chicago, Scott, Foresman & Co. (1913). 95 p.

We have here practical suggestions for the dramatization of high school classics. The authors believe that dramatization is one of the most successful of all devices for vitalizing the work of the English class and that the imagined difficulties vanish on nearer view, or else become, on working out, a stimulus to invention. Under Purpose and Method we have the Psychology, Pedagogy, and Types of Dramatization, then Ways and Means, Problem of Staging, including Setting, Costuming, Lights, Characters, treated with reference to the novel, short story, epic and ballad. Then come Specimens and Bibliography. We have here a four-year course with six items each in the first and second year, five in the third, and five in the fourth year. The work of each of the four years is also printed in separate pamphlets.

Psychology of high-school subjects. By CHARLES HUBBARD JUDD. Boston, Ginn & Co., (c. 1915). 515 p.

The more important chapters discuss psychological problems in mathematics, the psychology of space, analysis of geometry, of higher abstraction, reorganization of mathematics, psychology of language,

the English problem and the psychology of its course, foreign languages, opposition between the practical arts and language, manual skill, industrial courses, science, fine arts, history, generalized experience, teaching students to study, with a final chapter on the general problems of secondary education.

Everyday pedagogy, with special application to the rural school. By LILLIAN I. LINCOLN. Boston, Ginn & Co., (c. 1915). 310 p.

The author is an experienced superintendent and her book rather modestly discusses nearly a score and a half of topics such as the teacher, building, apparatus, physical comfort, morning exercises, arithmetic, reading, dictionary work, picture, spelling, language, poem, story, geography, history, nature study, drawing, writing, music, desk work, industrial work, recitation, play and discipline.

The appointment of teachers in cities; a descriptive critical and constructive study. By FRANK WASHINGTON BALLOU. Cambridge, Harvard University Press, 1915. 202 p.

A remarkable thing is that of seventy-three cities originally selected as a basis of this study, all responded except one. We are given here an interesting account of the evolution of the present appointive agencies, and then told much about the method of treating data, the significance of the subject, and what each type of agency does. In Chapter IV the eligibility qualifications and methods of determining them are taken up. Then comes the authority of boards, size, membership, committee organization, changes, method of selections, members and their term, this being based on twenty-eight cities. Chapter VIII treats the city superintendency, and the last chapter is a useful summary. The book is a valuable contribution to a very important subject.

The Young and Field literary readers. Book five. By ELLA FLAGG YOUNG and WALTER TAYLOR FIELD. Boston, Ginn & Co., (c. 1915). 384 p.

This is a book of heroes of all times and of all countries, from Perseus, Daniel, Regulus, Beowulf, Siegfried, Arthur, down to Florence Nightingale, Dr. Grenfell of Labrador fame, Captain Scott, who died in quest of the South Pole, etc. Five of them are in verse; nine by various authors deal with heroes of olden times. Then we have ten heroes of later times and fifteen stories making a cycle of the year. The book has a few illustrations.

Social and economic forces in American history. Edited by ALBERT BUSHNELL HART. Chautauqua, Chautauqua press (1915.) 523 p.

This book is made up of twenty-eight essays by different authors, edited by Professor Hart, who supplies a large number of articles. The following topics are treated: early New England life, social and economic conditions of Virginia, life in the colonies, provincial culture, people of new France, causes of the revolution, state of society, results of the war, the middle region, the south, the far west, American social characteristics, southern sectionalism, the new spirit of '76, the art of living, and the intellectual life.

Changing America; studies in contemporary society. By EDWARD ALSWORTH ROSS. Chautauqua, Chautauqua press (1915). 236 p.

This interesting booklet contains the following chapters: the outlook for plain folk, the world-wide advance in democracy, falling

birth-rate, significance of increasing divorce, women in industry, commercialism rampant, suppression of important news, the middle west, the fever of the people, the reconstruction of democracy, state universities, society and culture.

American ideals, character and life. By HAMILTON WRIGHT MABIE. Chautauqua, Chautauqua press (1915). 341 p.

The chief chapters in this work are, discovery and exploration, possessing the country, provincial America and literature, sectional and national literature, the American in art, school and college. university and research work, the American and his government, the country and the people. These interesting lectures are based on those given by the author, who was sent to Japan on the same Foundation as the first exchange professor or lecturer. In the course of six months he delivered nearly eighty addresses in Japan, Korea and Manchuria, without an hour of loneliness.

The ways of the planets. By MARTHA EVANS MARTIN. Chautauqua, Chautauqua press (1915). 273 p.

This very interesting book describes our relations to the planets, their origin, how the inferior planets seem to move, their path; then follow separate chapters upon Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, and the little planets and asteroids.

Manual of stories. By WILLIAM BYRON FORBUSH. Philadelphia, George W. Jacobs & Co., (c. 1915). 310 p.

This claims to be the most comprehensive book on the subject ever published dealing with value, kind, devices, relations of stories to play, use and character, the home, school and church story telling, etc. The list of sources claim to be unprecedented. The book is divided into two parts, How to Tell Stories, with fifteen headings, and The Bottle Story-People, with ten headings, with appendices on various topics connected therewith in ten headings.

Psychology and parenthood. By H. ADDINGTON BRUCE. New York, Dodd, Mead & Co., 1915. 293 p.

This voluminous author has given us here one of his most interesting books. In it he seeks to review and unify in non-technical language the findings of modern psychology which bear on the laws of mental and moral growth. Among the special topics treated are Importance of Environment, Suggestion, Secret of Genius, Intensive Child Culture, Laziness, Laughter, Hysteria, Menace of Fear. It is obvious that the author has on the whole drawn far more directly from life than from the literature which bears upon these subjects, with which there is no indication that he is familiar.

The parents' guide; a manual of child nature and nurture. Prepared by the Editorial Board of the University Society, with the assistance of Michael V. O'Shea, Dorothy Canfield Fisher and many others. New York, University Society, 1915. 2 v.

This is a book with a most impressive list of contributors and table of contents, and with very many new features. It is designed to be a handbook for parents, not a manual of housekeeping, although it contains good words on this subject. We are told that it is practical, simple, authoritative and complete.

The investigation of mind in animals. By E. M. SMITH. Cambridge, University press, 1915. 194 p.

The chapters are on protozoan behavior, retentiveness and habit formation, associative memory and sensory discrimination, instinct, homing, imitation, and the evidence for intelligence and for ideas.

American thought from puritanism to pragmatism. By WOODBRIDGE RILEY. New York, Henry Holt & Co., 1915. 373 p.

A brief notice of this book appeared in the *American Journal of Psychology* for July, 1915. Here we can only repeat that the heads of its chapters are as follows: Puritanism, Early Idealism, Deism, Materialism, Realism, Transcendentalism, Evolutionism, Modern Idealism, and Pragmatism.

Education for industrial workers; a constructive study applied to New York City. By HERMAN SCHNEIDER. Yonkers-on-Hudson, World Book Co., 1915. 98 p. (School Efficiency Series, edited by Paul H. Hanus.)

We have here a very interesting book, edited by Professor Hanus, who rightly regards Dean Schneider as the man who has worked out the most fruitful answer yet to the question of what kind of industrial schools are needed to meet the needs of the youth who are going to work early. The many papers, illuminating and extremely suggestive as they are, are not built upon any system, and the grouping is external. First, under *The Need of Industrial Education*, are treated its object, work in modern conditions and its classification, industrial education in the public schools. Then follows the problem in New York City, its numerical size and industrial scope. Finally comes the solution, education prior to gainful employment, corporation course in detail, the continuation school, and how to inaugurate both, with a final chapter of conclusions.

Life and work of Pestalozzi. By J. A. GREEN. Baltimore, Warwick & York. 393 p.

The first six chapters, of 115 pages, are biographical, beginning with Pestalozzi's early life, his expository and teaching work. The second part is expository, describing his principles, the aim of education, concrete intellectual development, practical and moral education, while part three is documentary, with his letters, the pamphlet of 1800, the report to parents, etc.

Methods of teaching in high schools. By SAMUEL CHESTER PARKER. Boston, Ginn & Co., c. 1915. 529 p.

This text-book seeks to apply to high school instruction the same general principles that have so often and fruitfully been applied to the consideration of elementary school methods. It claims to be based on modern experimental psychology, particularly in discussing the aspects of learning, which have been subjected to extensive laboratory investigation, especially motor learning and practice.

The teaching of drawing; its aims and methods. By S. POLAK and H. C. QUILTER. Second impression. Baltimore, Warwick & York. 168 p.

The authors find that of all subjects present-day changes in drawing are perhaps the greatest. The old-fashioned copy and geometrical models are disappearing and the pupils are studying real things.

That means the old classical is giving way to the new natural. The authors' method is somewhat novel and is copiously illustrated.

The teaching of geography. By B. C. WALLIS. Cambridge, University Press, 1915. 221 p.

This handbook is a very convenient *vade mecum* for teachers on the scope of school geography, descriptive, transition, systematic, argumentative, historical geography, tradition, practical exercises, use of the globe, contour lines, examinations, geography room and apparatus, etc.

Camp and trail in early American history. By MARGUERITE STOCKMAN DICKSON. New York, Macmillan Company, 1915. 162 p.

This book consists of stories of treasure seekers, home makers, empire builders, Indian fighters, and liberty seekers. The first Americans, the fair god of Mexico, quest of eternal youth, an English sea king, the "city of Raleigh," a valley town in old New England, the story of New France, Peter the headstrong, seeds of liberty, are the chapter headings.

Elson-Runkel primer. By WILLIAM H. ELSON and LURA E. RUNKEL. Chicago, Scott, Foresman and Company, c. 1914. 266 p.

This book is based on the belief that interest of material is the most important factor and that the key-note of interest is the story element or a plot, and also that the child's delight in oral history should be utilized in the very first step of reading. So real stories rich in dramatic interest have been chosen.

The General Education Board. An account of its activities, 1902-1914. New York, General Education Board, 1915. 240 p.

This interesting volume gives the history of the General Education Board, its resources, expenditures, farm demonstrations, boys' and girls' clubs, secondary education, colleges and universities, medical, rural and negro education, with appendices and illustrations, particularly of the farm work done.

Songs and poems of the great world war. Collected and edited by Donald Tulloch. Worcester, Davis Press (1915). 298 p.

Mr. Tulloch has here performed a very helpful work of love in honor of the motherhood of Worcester and of the world. All the receipts from this book go to the British-Born Women's Association. Its several hundred poems are in English, and, as we might expect, a majority of them are from British sources.

Our friend John Burroughs. By CLARA BARRUS. Boston, Houghton Mifflin Co., (1914). 286 p.

This work contains a number of autobiographical sketches with some self analyses, and then discusses in successive chapters Burroughs' early writings, a winter's day at Slabsides, back to Pepacton, camping with Burroughs and Muir, and finally an appreciation. The work has a few illustrations.

The lesson in appreciation; an essay on the pedagogics of beauty.
By FRANK HERBERT HAYWARD. New York, Macmillan Company,
1915. 234 p.

This work discusses beauty and its pedagogy, the principle of the first impression, music and poetry, positive and constructive preparation, the threshold of the lesson, the hour of appreciation, possibilities, pictorial art, drama and novel.

Historical essays on apprenticeship and vocational education. By JONATHAN FRENCH SCOTT. Ann Arbor Press, 1914. 96 p.

This book discusses the development of apprenticeship as a guild reform, the journeyman, the statute of artificers and its enforcement, apprenticeship as an educational system, the decline of the English system and the economic reasons for vocational education in America.

Health and cleanliness. By M. V. O'SHEA and J. H. KELLOGG. (Health series of physiology and hygiene.) New York, Macmillan Company, 1915. 301 p.

The body in health. By M. V. O'SHEA and J. H. KELLOGG. (Health series of physiology and hygiene.) New York, Macmillan Company, 1915. 324 p.

Health habits. By M. V. O'SHEA and J. H. KELLOGG. (Health series of physiology and hygiene.) New York, Macmillan Company, 1915. 216 p.

Making the most of life. By M. V. O'SHEA and J. H. KELLOGG. (Health series of physiology and hygiene.) New York, Macmillan Company, 1915. 298 p.

These illustrated and very attractive books are designed for texts and each topic has an epitome of the health problems involved, with review questions. It would be impossible in our limits to do justice to the scope or content of these books, for they touch physiology, personal efficiency, eating, sleeping, clothing, exercise, and the vast variety of topics involved in the problem of how to keep well.

Keeping fit. By ORISON SWETT MARDEN. New York, T. Y. Crowell Company, (c. 1914). 364 p.

This is a good popular book with several chapters on foods and diets. The author then discusses fatigue poisons, what to eat after fifty, out of doors, etc. In a word, the book consists mainly of the sprightly and well-informed talk of a well read and thoughtful man who is not scientific enough to lose his common sense, and apparently is not a physician but a hygienist.

Proceedings of the First National Conference on Race Betterment, January 8, 9, 10, 11, 12, 1914. Battle Creek, Mich., published by the Race Betterment Foundation. Edited by the Secretary. 625 p.

These proceedings are somewhat epochal in the fact that they represent the First National Conference, and also that they bring together some scores of addresses and discussions which are here classified under the heading statistical, general and individual hygiene, alcohol and tobacco, child life, sex questions, school, industrial, city, state and national hygiene, eugenics and immigration.

One man. By ROBERT STEELE. New York, Mitchell Kennerley, 1915. 394 p.

This is a novel, probably designed not to be so much the record of "a rake's progress" as to have a moral lesson by way of warning. It is very realistic and very detailed, but, in the humble opinion of the present reviewer, it would have been better had it never been written.

Modern essays. Selected and edited by John Milton Berdan, John Richie Schultz, Hewette Elwell Joyce. New York, Macmillan Company, 1915. 448 p.

This book contains nearly forty selected papers and essays from eminent authors, mostly living, and these are used as a method of teaching the rhetorical principle of exposition.

English spelling and spelling reform. By THOMAS R. LOUNSBURY. New York, Harper & Bros., 1900. 357 p.

This book still remains the best authority in English on simplified spelling.

Variation in the achievements of pupils; a study of the achievements of pupils in the fifth and seventh grades, and in classes of different sizes. By CHARLES HERBERT ELLIOTT. New York, Teachers College, Columbia University, 1914. 114 p.

Teachers' marks; their variability and standardization. By FREDERICK JAMES KELLY. New York, Teachers College, Columbia University, 1914. 139 p.

A comparative study of the intelligence of delinquent girls. By AUGUSTA F. BRONNER. New York, Teachers College, Columbia University, 1914. 95 p.

Educational guidance; an experimental study in the analysis and prediction of ability of high school pupils. By TRUMAN LEE KELLEY. New York, Teachers College, Columbia University, 1914. 116 p.

Individual differences in ability and improvement and their correlations. By J. CROSBY CHAPMAN. New York, Teachers College, Columbia University, 1914. 45 p.

The school system as an educational laboratory. By WILLIAM SETCHEL LEARNED. (Harvard-Newton bulletins, No. I, July, 1914.) Cambridge, Harvard University. 50 p.

Scales for the measurement of English compositions. By FRANK WASHINGTON BALLOU. (Harvard-Newton bulletins, No. II, September, 1914.) Cambridge, Harvard University. 93 p.

New Sloan readers, containing a complete course in phonics. Primer and First Reader. By KATHARINE E. SLOAN. New York, Macmillan Company, 1915. 2 v.

Muscular movement writing. Elementary and advanced books. By C. C. LISTER. New York, Macmillan Company, 1915. 2 v.

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AN EXPERIMENT IN TYPEWRITING

By C. G. BRADFORD, East Central State Normal School, Ada, Oklahoma

The psychological processes involved in typewriting have been studied experimentally by only a few persons, but they will probably be studied more widely in the near future. It is a splendid subject for investigation in experimental psychology; the learning processes in typewriting are very complex and probably involve all the elements and all the orders of habit formation.

1. *Aim.* The purpose of this investigation was to study the influence of: (1) practice; (2) different stimuli—visual, auditory, and audio-visual; (3) distribution of practice; and (4) secondary factors, such as momentary disposition, time of day, fatigue, concentration of attention, etc.

2. *Means and Method.* These experimental tests were individual in character and were taken by four subjects: the writer, Dr. E. L. Kuhnes, Miss Emma Stevens, who were students in New York University, and Dr. Paul Radosavljevich, Professor of Experimental Pedagogy in New York University, who are characterized in this work as subjects *B*, *K*, *S*., and *R*, respectively. The period of time covered in this experiment by each subject is as follows: subject *B*, from Dec. 8th to April 8th; subject *K*, from Jan. 8th to April 7th; subject *S*, from Feb. 17th to April 3rd; and subject *R*, from Jan. 13th to Feb. 20th.

The Hammond No. 12 typewriter was used. This machine has a universal keyboard with but three rows of keys. All capitals, figures, and punctuations, except the period, comma,

semicolon, and hyphen, require the use of a shift key. This machine has shift keys on one side only which is a disadvantage in writing by the touch method.

The materials copied were letters, letter-groups, syllables, words, and sentences, prepared for the purpose; Stickney's *Word by Word Spelling Book*, pp. 232-236; the first chapter in Dewey's *How We Think*; certain articles in the *Kindergarten Review*, Feb., 1914; Cunningham's *Text-Book of Anatomy*, pp. 284-289; and seven articles, written by Dr. Robert MacDougall, which may be found in the following publications: *Education*, XXIV, 1904; *The American Journal of Psychology*, IX, 1903; *The Journal of Abnormal Psychology*, VI, 1911; and *The Psychological Review*, V, 1898; IX, 1902; and IX, 1912. The subjects had no previous experience, except *K* who had probably written fifty pages during 1912-1913. These tests consisted of both preliminary and real practice.

3. *Procedure.* The regular time for taking these experiments, for subjects *B* and *K* was from seven to eight o'clock in the morning, and from one to two o'clock in the afternoon. Very few changes in time were necessary and those made showed no special results. Subject *R*, who practiced in the sight method only, took the tests just as the opportunity presented itself, and they were quite irregular. His time was so fully occupied with his regular professional work and he was interrupted so often while doing the tests that he finally gave it up entirely before the practice had proceeded far enough to give much valuable data. Subject *S*'s regular time was half past three o'clock in the afternoon, but this time was varied and will be explained more fully later. Subject *S* took the touch method only, but subjects *B* and *K* took both sight and touch method practice. Subject *B*'s practice covered a total of one hundred twenty-one days; subject *K* practiced ninety days; subject *S* practiced thirty-two days covering a period of forty-five days; and subject *R* practiced about thirty days. The touch and the sight methods will be treated separately.

I. SIGHT METHOD

Preliminary Tests. Only two subjects, *B* and *R*, took the preliminary tests in the sight method; *K*, the other subject taking the sight method practice was already an amateur of some experience, and for that reason began these tests with the real experiments.

The preliminary tests consisted of an orientation or general observation of the machine and methods of operating it, and six copies which were written ten times each. The first copy

contained two hundred letters in non-alphabetic order; the second copy consisted of two hundred letters in two-letter groups; the third copy was of four-letter groups; the fourth contained six-letter groups (these groups did not contain syllables); the fifth was of words of one syllable; and the sixth had words of two syllables.

These preliminary tests were copied by visual stimuli, and in case of subject *B*, came at the regular practice time. The copy was written but once at a sitting by subject *B*. Subject *R* wrote these copies at irregular times and was not limited to a certain number at a sitting. He wrote the five series (having omitted the two-syllable word test) in seven days, from January 13th to January 19th inclusive.

In this experiment the stroke was selected as a unit by which to determine the rate of progress. All movements necessary for operating the machine were reduced to terms of strokes. Striking a letter without the use of the shift key counted one stroke, striking a letter when the shift was used for a capital or for punctuation counted two strokes, running the carriage back counted three strokes. This seems to be a fair evaluation for the several operations with the exception of the use of the shift key. This machine has shifts on but one side and to strike a capital on the other side of the machine, using the touch method, is very awkward and much care must be taken to avoid mistake. The use of the shift took more time than striking two keys without the shift but since the data have been kept and computed by this evaluation it will not be changed.

Each of the copies, that is, letters, groups of letters, and words, was written ten times. From the daily records of this work curves have been plotted; tables showing the average strokes per minute have been written, the mean variation of time, and the average errors for each series of ten tests have been made.

Real Experiments. Subjects *B*, *K*, and *R* took the real experiments. In these tests a new element was introduced, namely, a variation in the kind of stimuli. This variation obtained, however, only for subjects *B* and *K*.

The practice material was composed of three-letter syllables, words, and sentences. There was a series of ten tests in each of the above, and each test was repeated three times at a sitting, being presented to consciousness by three different stimuli or combination of stimuli. That is, the copy was written, first, from visual stimuli, secondly from auditory stimuli (one subject pronouncing or dictating for the other), and thirdly, visual and auditory stimuli combined (the subject

visualizing and pronouncing the copy and writing it at the same time).

In addition to this regular practice an examination test was taken every fifth day, that is, at the end of a ten test series. Subject *R* finished his series in more or less time than five days for each and, therefore, his examinations were not so regular.

The examination consisted in writing from visual stimuli: 1, Letters in mixed order; 2, Nonsense syllables consisting of two consonants and a vowel; 3, Words in confused order; and 4, Sentences. Each part of the examination contained one hundred letters. The examination was taken at the completion of each ten test series, and a new series was begun at the following practice period.

Subject *R* finished this part of the work by Feb. 1st, and began copying from connected discourse found in "Cunningham's *Text-Book on Anatomy*, pages 284 to 289, which was discontinued Feb. 20th. Subjects *B* and *K* also finished the six ten-test series and took up the touch method Jan. 22nd.

4. *Results—Preliminary Tests.* From the daily records of the several tests tables have been made and curves have been plotted. These curves and tables show graphically the results of the work and the progress from day to day.

The preliminary writing was very tedious, especially the letter writing. Much care was necessary to keep from losing the place on the copy when the eyes were called away to direct the writing; and sometimes much time was lost in trying to find the proper place again. If the subject made a special effort for speed he invariably made many errors. These errors were as follows: striking the wrong key, striking between keys, striking the space bar before a word was finished, inverting letters, striking letters of the corresponding position on the opposite side of the keyboard, and others of similar nature.

By referring to the table of subject *B* for sight writing it will be seen, from the general averages, which series was the easiest to write. It appears from the table that the single letter writing was the least efficient, and the two syllable word writing most efficient. It also appears that the four-letter groups could be written faster than either the two- or six-letter groups. This is due to the ease with which the groups of four letters could be held in memory while being tapped off on the keys.

In the case of *R* a difference is shown. He also made slowest progress in writing isolated letters, and his best record was shown in writing words. He took the letter groups in a different order to that of *B*'s practice. His record for the two-

letter groups is better than either the four- or six-letter groups. It was probably easier for him to get the copy of the two-letter groups than the others. But as some of these preliminary tests were finished by *R* in one day, a preferable showing in any group might have been due to some transient cause, and likewise the unfavorable showing of other groups.

Real Experiments. Three subjects took part in the sight method real experiments, namely, *B*, *K*, and *R*. Subjects *B* and *K* took this part of the experiment (writing syllables, words, and sentences) in three ways, according to different stimuli, that is, visual, auditory, and audio-visual which have been explained above.

Curves were drawn and tables were made which show clearly the results of each of the different stimuli used in the practice. By comparing the figures in the tables it is plainly seen that the larger the copy unit the higher the record was. That is, the sentence writing shows a better record than does the word or syllable writing.

In comparing the results of the types by stimuli it is found that in case of subject *B* the total average of syllable, word, and sentence writing for ten tests each, are as follows: Visual, 74.44 strokes per minute; auditory, 79.15; and audio-visual, 74.26. For subject *K* the averages are: Visual, 76.05; auditory, 72.10; and audio-visual, 81.25. These figures seem to show that *B*'s reaction-time for auditory stimuli was less than for either visual or audio-visual, while *K* was more alert to audio-visual stimuli. Subject *B* was least efficient in the third variety of stimuli. He apparently was obliged to wait till the letters, words, or sentence or parts of a sentence had been pronounced before the fingers could be placed effectively on the proper keys, whereas with the other kinds of stimuli he could begin writing at once while visualizing or getting the auditory stimuli for advance copy. Subject *K* did not have this difficulty and therefore made a better record.

Subject *R* took the same tests for visual stimuli but did not take the other two types. His results are practically in accord with those of subjects *B* and *K* for visual stimuli practice. He repeated the three series once, and his practice time covered eight days.

5. *Conclusion.* Much care is necessary for a beginner to keep from getting lost in the copy; especially is this true when copying single letters. For one to rush means an increase in errors, and at times a confusion which impairs the orientation of the keyboard. Copying single letters is much slower than copying larger units, and the sentence copy gives the best record of any units practiced in these tests.

In the case of subject *B*, practice in the real experiments was most efficient when reacting to auditory stimuli, while subject *K* was most efficient in reacting to audio-visual stimuli. All practice curves and examination curves, when for a reasonable length of practice, show a constant ascending tendency.

II. THE TOUCH METHOD

Procedure—Preliminary Tests. Subjects *B*, *K*, and *S* took the touch method writing. Subjects *B* and *K* began Jan. 22, and *S* began Feb. 17, 1914. The material used in this method was of the same nature, and of equal difficulty as that used in the sight writing. A slight variation, however, occurred in the preliminary practice in regard to the technical form, namely, in the sight method simple letter groups formed a part of the copy material whereas three-letter syllables were used in writing by touch. Subjects *B* and *K* finished the full six ten-test series in the preliminary work but subject *S* took only three of them.

For all the subjects the work at the beginning was extremely slow. A piece of cardboard fastened to the nuts of the ribbon spools screened the keyboard from view. The subjects began by using certain keys, namely, "a" and ";" for references. They kept the little fingers of the left and right hands, respectively, on these keys and felt their way by counting the keys to the various other keys when needed.

The first task of importance was to learn the position of all the keys, and be able to keep a mental picture of the keyboard as a whole. With a chart of the keys, on the cardboard used to screen the keyboard, the subject could immediately locate any key; and by feeling the way from the keys remembered he could locate any other key desired. Subject *B* within three or four days had a clear visual memory of the whole keyboard. Subjects *K* and *S* used the chart much longer, possibly ten days or two weeks in all.

Real Experiments. The material for copy in the real experiments was the same as that used in the sight practice, that is, it was of the same degree of difficulty, and had the same characteristics. Also the same stimuli (visual, auditory, and audio-visual) were used by *B* and *K* as in the former method.

As soon as the preliminary tests were finished subject *S* began copying plain, simple articles in the *Kindergarten Review* for Feb., 1914. On account of bad weather, holidays, and vacation at the University (New York), and other unavoidable causes subject *S* had a number of interruptions in practice; and while the regular practice time was 3.30 P. M.

the time was varied in a few cases because of necessity. The subject ceased practice April the third.

The examination test was taken by subjects *B* and *K* as in the previous work, and though a different lot of copies, they were the same in all essentials, and were taken in the same way as in the sight method.

When subjects *B* and *K* finished writing the ten-test series (nine in all, *i. e.*, three for each kind of stimulus) they began copying articles, written by Dr. Robert MacDougall, which have already been mentioned. For this copy work a thirty-minute period, exceptions to which will be described later, was used; and as many strokes as possible were made during this time.

A fifteen-minute examination consisting of letter, word, and sentence writing was also carried. It was taken once each week. Letters were written for five minutes, words for five minutes, and sentences in connected discourse, for five minutes. For the letters and words Stickney's *Word by Word Spelling Book* was used; and for sentence writing the first chapters of Dewey's *How We Think* were used. This fifteen-minute period was deducted from the regular practice-period leaving but fifteen minutes for regular practice at examination periods. This copy practice lasted from Feb. 15th to April the 8th. A break in the machine caused a loss, in the practice of subjects *B* and *K*, of three periods on Mar. 8th and 9th.

4. *Results.* The results are, for some of this work, very interesting; while other portions follow the general characteristics of other general experiments of this nature. They are shown by curves and by tables compiled from the practice data.

Preliminary Tests. In the preliminary tests all subjects showed rapid gain in strokes per minute. Subject *S* in the first series of tests had an average of 16.66, which was nearly doubled in the second, and for the third the average was 36.9 strokes per minute. Subject *B* began with an average of 15.60 for the first series, and reached an average of 47.31 strokes per minute in the sixth or last series. Subject *K*'s average for the first series was 61.66 strokes per minute. Whether or not this increase in strokes over the other subjects was due to his previous practice the year before in sight writing cannot be determined.

There was rapid improvement at first because some of the simplest movements and associations were readily learned; and as many superfluous movements were, by more and more

direct associations, eliminated, the process of writing cleared up and speed increased.

Real Experiments. In the real experiments the results show continuous gains for all subjects. Subjects *B* and *K* took the syllable, word, and sentence series for the three forms of stimuli described above, while subject *S* began at once copying connected discourse by visual stimuli only. Subject *B* reached the highest number of strokes writing from visual stimuli, and the lowest number writing from auditory stimuli; subject *K* did the best work, in this case as in sight writing, with audio-visual stimuli and the poorest with auditory stimuli. Subject *B*'s best record in sight writing was with auditory stimuli, but in touch writing it swung over to the visual.

The subjects realized soon after beginning these tests that certain words were becoming easier and easier to write until it took very little conscious effort to write them. This was evidence that the higher order habits above the letter stage were forming; nevertheless many useless movements continued to be present. Some of these movements were: moving the fingers from a key just used before knowing where it would next be needed, and rendering it necessary at times to re-locate the same key before using any other key. Another source of superfluous movements consisted in involuntary nervous impulses which terminated in striking a key a second time or striking some other key while passing the fingers from one key to another. The subject seemed to have no control over these movements, they just "did it themselves."

In subject *S*'s practice of copying connected discourse progress was continuous except a few times when the record was pushed beyond the point that the subject was prepared to hold. In these cases only a few practices were necessary to put the record back at the maximum and a new leap was taken. The practice began March the 10th with an average of 36.6 strokes per minute and ended April the 3rd with an average of 59.33 strokes. During this period of 24 days, however, only 16 practices of thirty minutes each were taken. In a few instances the practice was moved up from 3.30 P. M. to 2.30 P. M., and one time up to 10.20 A. M., but as nothing occurred contrary to the results of the regular practice time no exceptions are made. By referring to the table showing the results of subject *S* it will be seen that the per cent. of error is extremely low, ranging, with one exception, from .27 to 2.77.

Subject *B* and subject *K* in copying connected discourse, thirty minutes twice a day, made steady progress as may be seen by referring to the curves and tables showing the results of the series of practices. This copying of connected dis-

course extended over a period of fifty-two days. Beginning March 31 subject *B* devoted four days to writing twenty minutes at a time three times a day, the third period coming between ten and eleven o'clock of evenings. And for the five remaining days of the practice the subject wrote for one hour using but one period a day. These variations were made to test the effects of distribution of practice, and the time of day. The table of subject *B*'s work for these days of three periods of practice each shows that with one exception the last practice gave lower results than the first practice, and in only one case is the second period record higher or as high as the first. Taking an average of the first, second, and third periods we have the following: first period, 122.98; second period, 118.86; and third period, 114.08 strokes per minute. This seems to show that for subject *B* the best period is seven to eight o'clock in the morning, the second best between one and two in the afternoon, and third, or least efficient period between ten and eleven in the evening. This may be only suggestive because of the few trials used; but coming as they do at the end of a long series of tests these trials appear to the writer to be significant. Subject *K* took the three twenty-minute tests only on April the first and third, and the one hour test on the four following days. The averages for the three-tests a day periods are as follows: first period, 126.32; second, 135.57; and third, 124.30. This record also shows the least efficient practice done at the evening sittings, but contrary to subject *B*'s record, the best record was made at the afternoon periods. Subject *B*'s one hour practices gave poorer results than the morning practice of the three-a-day twenty-minute periods. In the case of five one-hour a day practices an average shows 121.51 strokes per minute which is better than either the afternoon or evening twenty minute practice, and is a close second to the morning record for the shorter tests. But subject *K*'s one hour practice gave poorer results than any one of the three-a-day periods.

In many cases the result of the morning practice was not as good as it should be on account of practicing with numb hands. The subjects often came in from a walk in the cold wind and before realizing that the hands were numb began the practice. This numbness caused slowness in action and an increase in the per cent. of error.

The material for the connected discourse writing was all written by the same author as mentioned above; therefore, it was practically homogenous in nature. But one of the articles was in finer print (being a reprint) than the others and for that reason was slightly more difficult. This is

shown by the drop in the record on March 5th for subject *K*, and March 6th for subject *B*, which drop required some four or five practices to overcome.

A break in the machine on March 8th caused a loss of three practices. With both subjects the practices following the break showed improvement over the last practices before the break. And this rise was permanent with subject *K*, and also with subject *B* with few exceptions.

Whenever attention could not be concentrated, for any reason, the record was lowered and errors increased. Any momentary indisposition seemed to affect the mental processes necessary for learning typewriting. As these processes are very complex and of a high mental order any condition which lowered mental vigor decreased the ability for progress in this activity.

Some days the writing went easily, associations came with apparently little effort and the process seemed agreeable and pleasant. At other times progress was made only through grim determination and special effort which many times also resulted in a marked increase in error. At times it appeared to the writer that try as he might progress was slow. It seemed that determination was at high tide but the fingers would not work smoothly and rapidly. This coincides with Book's findings in similar work: "It is not what the learner would like to do that determines his rate of progress in learning, but what his mental and physical conditions at the time will let him do."¹

Great concentration must be had at first, and so many different elements connected with the writing demand the attention at the same time that it is difficult for all to be attended and to make equal progress simultaneously; therefore letter, word, and phrase associations are always forming, and other minor details are being perfected very unevenly, but nevertheless constantly.

The effect of practice in this series of experiments on the typewriter is obvious. The tables show, with the constant natural variations, an increasing tendency.

The thirty-minute period twice a day proved to be the most economical distribution in this series of experiments.

It is very interesting to study the increase in per cent. for sixteen consecutive practices of each of the touch method subjects. Subject *S* took one thirty minute practice per day, in copying connected discourse for sixteen days; the sixteen practices on account of breaks in the daily practice covered

¹ W. F. Book, *The Psychology of Skill* . . . in *Typewriting. Univ. of Montana Studies in Psychology*, 1908, I, pp. 5-188.

a period of twenty-four days, while subject *B* and subject *K* took two thirty minute periods per day without any loss, save three periods, for 53 days. The per cent of gain for subject *S* during the sixteen practices was 62; that for subject *K* for the same time (two periods a day for 8 days) was 75.5; and that for subject *B* for the same number of practices was 84. Curves X and Y will show the results of the entire connected discourse practice and the seventh day examinations during this practice- for subjects *B* and *K*. There is also a curve showing the progress in practice for subject *S*. In curves Y for subjects *B* and *K* the letter, word, and sentence copying is indicated by (a), (b), and (c) respectively.

No extended plateaus occurred in the experiments except for subject *K*. He had two rather lengthy delays, one of which lasted twenty days, the other had been in evidence ten days when the experiment closed. In case of the first of these plateaus there was probably on the whole a slight gain, but in the second instead of a gain there was a distinct loss. If time had allowed, it would have been of much interest to continue the experiment long enough to see what the result of this plateau would be. The first one came after fifteen days of copying in this part of the work, and the second one came after the fortieth day. These delays for subjects *B* and *S* were for but three or four days and seemed to be only the time required to bring the average rate up to a previous leap in the practice.

III. CONCLUSION

Writing by touch is very slow and discouraging at first; but the learner soon becomes familiar with certain keys and with certain associations, and the practice becomes interesting.

There are many minor details as well as the more important mental processes to be attended to continuously and simultaneously which make the learning process highly complex.

Habits of all orders make progress simultaneously, some in less, some in greater degree, and occasionally there seems to be an interchange of rates among the different orders in regard to development. That is, sometimes the lower order usurps the place of a higher order and thus reduces the writing to a slower and cruder type. But this falling back in progress of the higher-order habits is not for a long period; it soon gains the ascendancy again.

Progress is not characterized by a smooth curve, but rather by a very irregular one; at times the subject leaps forward beyond the point which his efficiency can maintain, then a drop occurs, followed by constant gain till the maximum is

again reached; and then another leap is taken. This zigzag progress seems to be the natural order of the learning process.

The curves show conclusively that the subject makes the least gain in writing from letter copy, and the greatest gain in writing from connected discourse.

Probably the best time of day for such work as typewriting is not the same for all individuals; but these experiments show that work late in the evening is not so efficient as that done earlier in the day.

Long practice periods are not so successful as short ones repeated oftener.

Learning to typewrite consists of very complex mental processes which necessitate absolute concentration of the attention.

The key to success in this activity is good mental and physical condition and an agreeable attitude towards the work.

Under proper conditions practice will produce results in mental associations and manual dexterity far beyond what would ordinarily be anticipated.

TABLE I
SUBJECT B. SIGHT METHOD

The table shows the average number of strokes per minute, the mean variation in time, the average error, and the kind of material written.

PRELIMINARY TESTS

<i>Date</i>	<i>Strokes</i>	<i>M. V.</i>	<i>Error</i>	<i>Material</i>
Dec. 8-12	35.80	.50	1.7	Single letters
" 13-17	38.05	.31	3.6	Two-letter groups
" 18-22	41.60	.29	2.3	Four-letter groups
" 23-27	38.67	.45	3.3	Six-letter groups
" 28-Jan. 1	56.25	.20	3.3	One-syllable words
Jan. 2-6	64.77	.16	3.5	Two-syllable words

REAL EXPERIMENTS
Visual Stimuli

Jan. 7-11	57.66	.35	2.2	Single syllables
" 12-16	81.15	.13	0.8	Single words
" 17-21	84.53	.16	1.4	Words in sentences

Auditory Stimuli

Jan. 7-11	60.00	.33	4.9	Single syllables
" 12-16	82.44	.18	1.5	Single words
" 17-21	95.03	.14	0.7	Words in sentences

Audio-visual Stimuli

Jan. 7-11	54.76	.20	1.1	Single syllables
" 12-16	79.09	.20	1.2	Single words
" 17-21	88.95	.10	4.5	Words in sentences

TABLE II—*Continued*

SUBJECT B. SIGHT METHOD

This table shows the progress of writing letters, nonsense syllables, single words, and sentences, and represents examination tests taken at the end of each ten test series of the experiment. The average strokes per minute, the error, and the mean variation of strokes are shown.

<i>Date</i>	<i>Letters</i>		<i>Syllables</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>
Jan. 7	41.08	1	84.80	4	51.50	1	65.82	3
" 12	41.94	1	46.08		58.88		69.12	
" 17	44.44		51.73	1	66.66	8	72.53	1
" 22	42.40	1	53.80	1	65.34		74.40	2
M. V.	.98		12.84		5.40		3.00	

TABLE III

SUBJECT B. TOUCH METHOD
PRELIMINARY TESTS

<i>Date</i>	<i>Strokes</i>	<i>(Time)</i> <i>M. V.</i>	<i>Average</i> <i>Error</i>	<i>Material Written</i>
Jan. 22-24	15.60	4.14	25.5	Single letters
" 25	33.05	.88	4.6	Single syllables
" 26-27	36.03	.50	6.1	Two syllables
" 28	46.09	.33	10.1	Three syllables
" 29-30	46.77	.45	13.7	Words of one syllable
" 30-31	47.31	.28	3.8	Words of two syllables

REAL EXPERIMENTS

Visual Stimuli

Jan. 31-Feb. 5	63.72	.29	7.9	Single letters
Feb. 5-9	60.94	.13	11.6	Single words
" 9-14	71.91	.18	7.7	Words in sentences

Auditory Stimuli

Jan. 31-Feb. 5	51.42	.32	9.2	Single syllables
Feb. 5-9	58.39	.17	11.6	Single words
" 9-14	72.34	.18	66.0	Words in sentences

Audio-visual Stimuli

Jan. 31-Feb. 5	60.13	.36	6.2	Single syllables
Feb. 5-9	64.47	.20	6.2	Single words
" 9-14	72.34	.11	5.8	Words in sentences

TABLE III—*Continued*

EXAMINATION

<i>Date</i>	<i>Letters</i>		<i>Syllables</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>
Jan. 31	50.00	20	46.15	8	43.84	16	49.13	2
Feb. 5	58.11	14	50.64	14	42.50	16	52.36	9
" 9	58.55	2	60.93	2	61.80	1	57.36	4
" 14	56.20	2	74.21		70.44	11	73.85	4
M. V.	2.86		9.58		13.97		7.43	
Gain in %	.124		.608		.606		.503	

TABLE IV

SUBJECT B. TOUCH METHOD

This table shows the results of copying connected discourse

* Material changed to finer print.

† Break in the machine.

<i>Date</i>			<i>Date</i>		
<i>Strokes</i>	<i>% of error</i>		<i>Strokes</i>	<i>% of error</i>	
Feb. 15	49.60	1.81	Mar. 4	91.76	1.66
" 15	43.43	1.07	" 4	88.50	1.09
" 16	52.3	0.15	" 5	102.56	2.17
" 16	60.63	0.98	" 5	104.00	1.74
" 17	54.50	1.89	" 6*	90.65	1.62
" 17	54.06	2.15	" 6	95.16	1.99
" 18	59.00	1.48	" 7	90.63	1.21
" 18	58.76	1.90	" 7	94.69	1.00
" 19	65.43	2.64	" 8	98.77	1.92
" 19	59.26	1.67	" 8	†	
" 20	67.03	1.74	" 9	†	
" 20	68.63	1.21	" 9	†	
" 21	66.03	2.17	" 10	107.73	1.55
" 21	66.13	1.71	" 10	101.08	1.74
" 22	74.26	2.06	" 11	107.03	1.45
" 22	71.10	1.07	" 11	102.80	1.38
" 23	70.03	0.66	" 12	106.10	1.82
" 23	71.83	1.50	" 12	96.76	1.78
" 24	79.66	1.92	" 13	107.00	2.02
" 24	77.06	1.95	" 13	105.13	1.42
" 25	79.76	2.08	" 14*	109.64	3.01
" 25	75.66	1.14	" 14	103.00	0.81
" 26	83.56	1.83	" 15	106.80	1.54
" 26	81.76	1.43	" 15	107.80	1.51
" 27	88.00	1.47	" 16	107.70	1.55
" 27	83.20	1.24	" 16	110.80	1.50
" 28	77.66	1.09	" 17	111.87	1.48
" 28	87.76	1.25	" 17	106.00	1.40
Mar. 1	89.76	1.30	" 18	110.26	1.96
" 1	93.50	1.21	" 18	106.16	1.56
" 2	92.26	1.26	" 19	106.50	2.31
" 2	92.20	1.52	" 19	107.33	1.74
" 3	90.60	1.51	" 20	108.06	1.85
" 3	90.06	1.18	" 20	113.84	2.25

TABLE IV—Continued

<i>Date</i>	<i>Strokes</i>	<i>% of error</i>	<i>Date</i>	<i>Strokes</i>	<i>% of error</i>
Mar. 21	107.05	1.80	Mar. 30	108.53	2.15
" 21	106.20	2.10	" 31	118.85	2.47
" 22	102.20	1.81	" 31	117.65	3.27
" 22	110.52	2.32	" 31	102.85	3.06
" 23	108.80	2.25	Apr. 1	128.00	2.83
" 23	105.82	1.73	" 1	136.05	3.53
" 24	110.53	2.20	" 1	113.57	2.26
" 24	109.10	1.48	" 2	113.00	2.93
" 25	114.80	2.26	" 2	110.71	2.13
" 25	115.90	2.83	" 2	122.48	2.43
" 26	127.60	2.11	" 3	132.48	3.72
" 26	120.06	2.60	" 3	111.05	3.26
" 27	119.00	2.12	" 3	117.34	2.53
" 27	119.60	2.20	" 4	117.76	3.25
" 28	119.15	2.38	" 5	122.86	2.46
" 28	121.96	1.91	" 6	119.54	2.30
" 29	126.06	2.70	" 7	121.40	1.86
" 29	123.79	2.38	" 8	126.00	1.73
" 30	122.66	3.37			

TABLE V

EXAMINATION IN THE TOUCH METHOD

<i>Date</i>	<i>Letters</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>% Error</i>	<i>Strokes</i>	<i>% Error</i>	<i>Strokes</i>	<i>% Error</i>
Feb. 22	58.6	0.00	45.4	0.81	66.0	8.80
Mar. 1	72.6	0.82	84.0	2.30	80.0	2.50
" 8	76.8	1.60	79.4	0.75	127.2	1.57
" 15	60.0	2.60	86.6	0.18	114.0	0.37
" 22	73.6	0.81	88.8	1.35	106.0	1.88
" 29	67.46	2.07	87.4	2.60	127.8	3.75
Apr. 5	79.6	2.51	107.8	2.77	112.9	2.53

TABLE VI

SUBJECT K. SIGHT METHOD

REAL EXPERIMENTS

Visual Stimuli

<i>Date</i>	<i>Strokes</i>	<i>(Time) M. V.</i>	<i>Average error</i>	<i>Material Written</i>
Jan. 8-11	52.66	.61	2.0	Single letters
" 12-16	83.90	.20	1.7	Single words
" 17-21	91.61	.21	1.2	Sentences

TABLE VI—*Continued*

Auditory Stimuli

Jan. 8-11	49.37	.62	5.7	Single letters
" 12-16	81.45	.24	2.2	Single words
" 17-21	105.5	.14	1.1	Sentences

Audio-visual Stimuli

Jan. 8-11	56.43	.43	1.7	Single letters
" 12-16	92.9	.18	0.4	Single words
" 17-21	94.44	.15	3.2	Sentences

TOUCH METHOD

PRELIMINARY TESTS

Visual Stimuli

Jan. 22-24	19.37	.14	27.9	Single letters
" 25	35.38	.94	18.8	Single syllables
" 26-27	29.81	.67	16.3	Two-syllable groups
" 28	47.39	.38	8.5	Three-syllable groups
" 29-30	67.81	.40	13.3	Words of one syllable
" 31	61.66	.43	7.6	Words of two syllables

REAL EXPERIMENTS

Visual Stimuli

Jan. 31-Feb. 4	86.20	.25	5.9	Single syllables
Feb. 5- 9	83.08	.11	8.3	Single words
" 9-14	89.41	.11	5.6	Sentences

Auditory Stimuli

Jan. 31-Feb. 4	71.42	.17	12.0	Single syllables
Feb. 5- 9	74.80	.14	6.8	Single words
" 9-14	88.48	.09	6.8	Sentences

Audio-visual Stimuli

Jan. 31-Feb. 4	86.95	.23	6.8	Single syllables
Feb. 5- 9	86.52	.07	6.5	Single words
" 9-14	88.31	.09	5.8	Sentences

TABLE VII
SUBJECT K. EXAMINATIONS
Sight Method

<i>Date</i>	<i>Letters</i>		<i>Syllables</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>Av. error</i>	<i>Strokes</i>	<i>Av. error</i>	<i>Strokes</i>	<i>Av. error</i>	<i>Strokes</i>	<i>Av. error</i>
Jan. 12	40.6	4	54.0	1	81.2	1	68.6	0
" 17	47.7	3	56.8	3	72.3	0	80.8	0
Touch Method								
Jan. 22	46.8	5	61.3	4	80.4	1	80.9	2
" 31	58.1	6	74.1	6	61.9	11	66.4	3
Feb. 5	66.5	14	77.8	15	75.3	9	77.4	24
" 9	74.0	4	89.5	7	87.5	14	87.5	16
" 14	75.1	6	89.6	9	88.7	7	84.2	6
M. V.	7.2	2.8	8.4	3	8.1	4	5.9	7.8

TABLE VIII
SUBJECT K. TOUCH METHOD
Copying Connected Discourse

<i>Date</i>	<i>Strokes per min.</i>	<i>% of error</i>	<i>Date</i>	<i>Strokes per min.</i>	<i>% of error</i>
Feb. 15	49.80	0.54	Feb. 27	107.53	1.30
" 15	57.83	1.44	" 28	100.09	1.25
" 16	56.63	1.06	" 28	98.56	1.86
" 16	62.76	1.64	Mar. 1	104.56	2.27
" 17	64.96	1.33	" 1	113.60	0.99
" 17	70.73	3.66	" 2	103.84	1.39
" 18	72.74	2.22	" 2	108.50	2.23
" 18	73.13	2.19	" 3	111.93	1.19
" 19	65.96	3.43	" 3	108.37	0.98
" 19	72.46	1.46	" 4	116.16	1.04
" 20	65.33	0.81	" 4	103.63	1.59
" 20	65.99	1.44	" 5	111.86	1.69
" 21	77.56	2.06	" 5	105.96	2.26
" 21	75.73	1.41	" 6	110.90	1.32
" 22	87.46	1.83	" 6	105.03	1.21
" 22	80.73	2.33	" 7	105.96	1.69
" 23	65.56	1.37	" 7	96.01	0.97
" 23	82.66	3.31	" 8	109.43	2.10
" 24	87.66	1.10	" 8	†	
" 24	87.90	0.98	" 9	†	
" 25	86.93	1.56	" 9	†	
" 25	95.03	1.15	" 10	110.53	1.37
" 26	99.83	1.13	" 10	108.33	1.44
" 26	95.96	1.57	" 11	119.33	1.28
" 27	93.73	1.03	" 11	114.36	2.12

† Break in the machine.

TABLE VIII—*Continued*

<i>Date</i>	<i>Strokes per cent.</i>	<i>% of error</i>	<i>Date</i>	<i>Strokes per min.</i>	<i>% of error</i>
Mar. 12	111.86	0.98	Mar. 25	133.66	1.82
" 12	99.76	1.59	" 25	143.33	1.18
" 13	109.43	1.65	" 26	150.46	2.17
" 13	103.63	1.48	" 26	136.66	2.33
" 14	114.23	1.69	" 27	144.26	1.08
" 14	97.26	1.29	" 27	133.66	1.82
" 15	122.83	1.58	" 28	138.13	1.85
" 15	112.33	3.49	" 28	134.40	2.70
" 16	128.26	1.61	" 29	138.13	2.17
" 16	121.43	1.51	" 29	147.66	0.98
" 17	108.06	2.15	" 30	138.53	3.96
" 17	117.60	1.30	" 30	139.06	2.15
" 18	118.87	1.93	" 31	130.00	2.57
" 18	139.36	1.31	" 31	133.20	2.73
" 19	127.00	1.45	Apr. 1	137.25	2.84
" 19	106.53	1.68	" 1	137.25	2.41
" 20	111.03	2.26	" 1	133.20	2.02
" 20	104.30	1.85	" 2	145.00	1.89
" 21	111.56	1.31	" 2	130.20	2.34
" 21	98.26	1.93	" 3	115.40	2.29
" 22	135.31	1.95	" 3	115.40	1.31
" 22	119.83	2.25	" 3	133.90	2.54
" 23	146.62	2.62	" 4	122.10	2.48
" 23	126.56	2.23	" 5	122.10	1.67
" 24	138.83	1.89	" 6	132.05	2.52
" 24	145.53	2.91	" 7	130.31	2.14

TABLE IX
EXAMINATION
SUBJECT K

<i>Date</i>	<i>Letters</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>% of error</i>	<i>Strokes</i>	<i>% of error</i>	<i>Strokes</i>	<i>% of error</i>
Feb. 22	56.6	2.22	55.0	3.02	82.4	2.52
Mar. 1	70.0	3.06	92.4	2.16	124.0	3.31
" 8	84.7	2.98	106.4	2.25	127.0	1.40
" 15	92.2	2.52	113.6	2.81	113.6	2.46
" 22	98.0	2.46	129.8	2.00	120.0	1.58
" 29	71.0	2.28	105.0	11.11	150.5	3.58
Apr. 5	79.6	2.70	152.6	3.31	119.8	1.50

† Practices missed.

TABLE X
SUBJECT R. SIGHT METHOD
PRELIMINARY TESTS

<i>Date</i>	<i>Average strokes</i>	<i>(Time) M. V.</i>	<i>Average error</i>	<i>Material written</i>
Jan. 13-14	25.75	2.00	5.2	Single letters
" 14-15	35.08	0.96	7.2	Six-letter groups
" 16	45.63	0.70	8.7	Two-letter groups
" 17	41.81	0.50	6.8	Four-letter groups
" 19	53.33	0.60	5.7	One-syllable words

REAL EXPERIMENTS

Jan. 20-21	46.15	0.18	0.9	Syllables
" 20-21	48.00	0.50	1.9	Words
" 20-21	52.40	0.42	3.5	Sentences
" 23-28	67.66	0.45	3.2	Syllables
" 23-28	84.00	0.00	0.66	Words
" 23-28	74.28	0.46	2.6	Sentences

CONNECTED DISCOURSE

Copying from Cunningham's "Text-book of Anatomy"

Feb. 2	41.08	% Error	.81
" 3	42.75	"	1.43
" 5	40.24	"	1.31
" 6	48.36	"	.56
" 10	42.00	"	.58
" 13	54.07	"	1.10
" 18	39.60	"	1.01
M. V.	4.10	"	.28

EXAMINATIONS

<i>Date</i>	<i>Letters</i>		<i>Words</i>		<i>Sentences</i>	
	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>	<i>Strokes</i>	<i>Error</i>
Jan. 20	51.33	1	39.00	0	56.00	0
" 22	34.30	1	58.00	0	56.00	0
" 28	51.50	1	58.50	0	56.00	0
Feb. 20	79.50	1	78.66	0	74.66	0
M. V.	12.66		10.04		7.02	

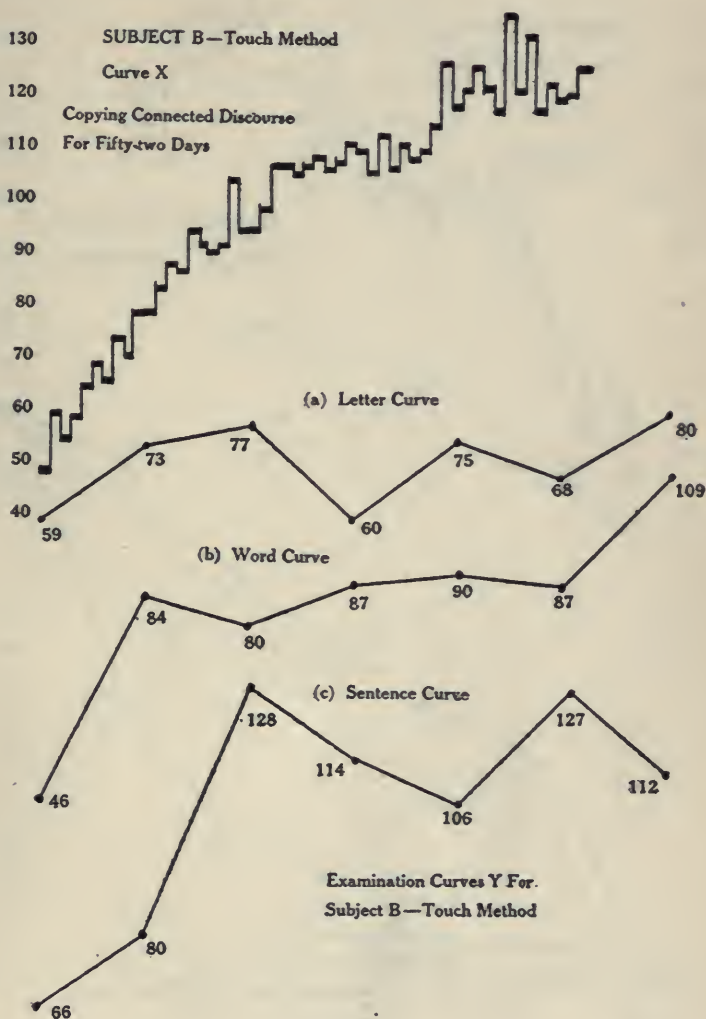
TABLE XI
SUBJECT S. TOUCH METHOD
PRELIMINARY TESTS

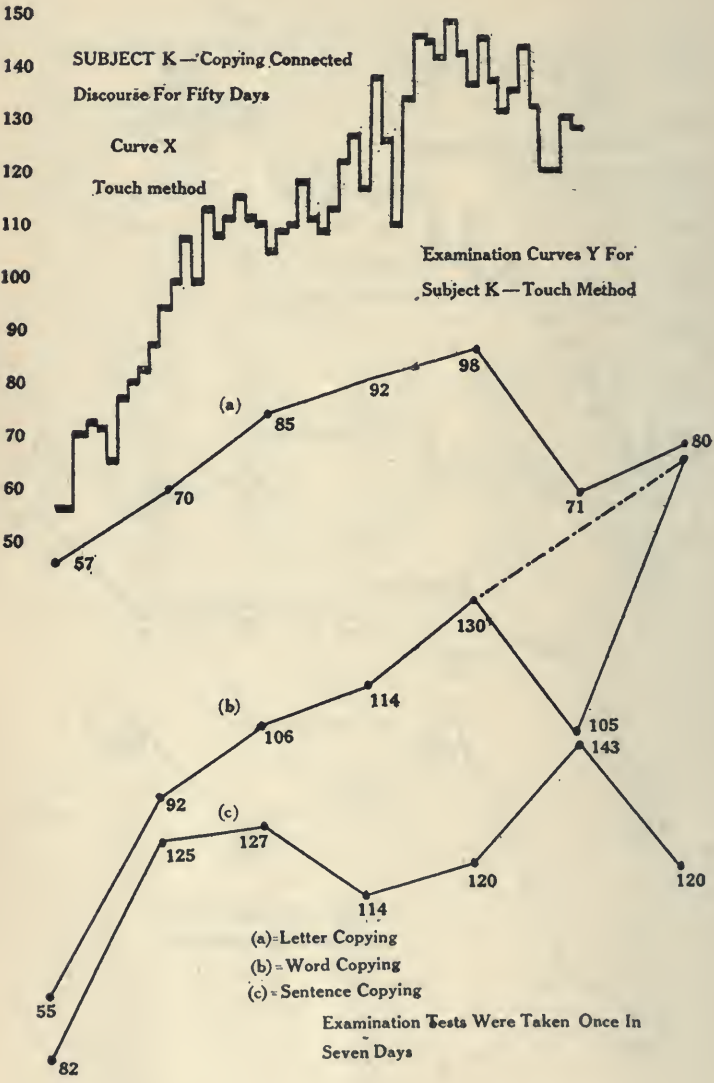
<i>Date</i>	<i>Strokes per min.</i>	<i>Strokes M. V.</i>	<i>% of error</i>	<i>Material written</i>
Feb. 17-20	16.66	2.2	4.4	Single letters
" 21-28	31.57	5.3	1.8	One-syllable words
Mar. 4-7	36.90	2.8	2.7	Two-syllable words

REAL EXPERIMENTS

Connected discourse

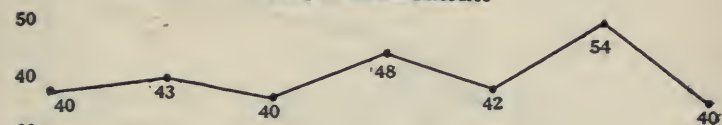
<i>Date</i>	<i>Strokes per min.</i>	<i>% of error</i>	<i>Date</i>	<i>Strokes per min.</i>	<i>% of error</i>
Mar. 10	36.6	2.54	Mar. 24	45.0	1.48
" 11	34.9	9.35	" 25	47.0	1.48
" 16	44.3	0.98	" 26	54.8	0.61
" 17	33.43	2.49	" 27	48.73	0.27
" 18	35.25	2.36	" 31	46.41	2.37
" 19	36.1	2.77	Apr. 1	49.43	0.61
" 20	39.4	0.76	" 2	58.66	0.52
" 23	45.2	2.73	" 3	59.33	0.51





SUBJECT R—Sight Method

Copying Connected Discourse



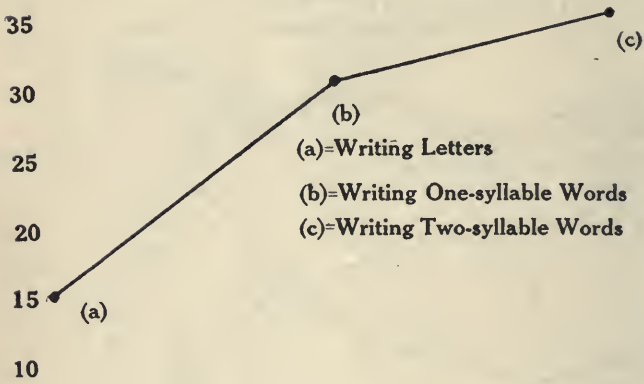
(a)

(b)

(c)

Examination Curves For
(a), Letters (b), Words (c), Sentences

SUBJECT S — Touch Method



Curve For Copying Connected Discourse

THE NAMING OF COLORS BY CHILDREN THE BINET TEST

By W. G. BATEMAN, University of Montana

INTRODUCTION

While writing a series of papers dealing with the language development of two children it became desirable to compare their progress in naming colors with that made by other children. From the evidence collected it was difficult to draw any conclusions as to what constituted normality in this direction. First, from the published vocabularies of children under six years of age or from notes concerning development in general, it appeared that small children learned color names rather easily. On the other hand from several investigations on large groups of somewhat older children, chiefly foreign, it was concluded that they were late in acquiring this ability. From the last evidence Binet and Simon in their tests for intelligence decided that the correct naming of the four important colors, red, blue, green, yellow, was a good test for the eighth year. Later, somewhat dissatisfied with this, they placed it in the seventh year. To Bobertag this seemed not so good as before, so he restored it to the eighth year. In America, however, Terman and Childs found this entirely too easy for children of this age level and in their tentative revision of the Binet scale transferred the test to the fifth year. With the hope of adding more evidence to that already accumulated which might help to decide the above points the examination of 600 school children of Missoula, Montana, was undertaken.

HISTORICAL

The earliest use of a color term, at least for English speaking children, was noted by Shinn (27) who observed her niece to use red at 16 months. Almost as early Bohn's child (9) used green and yellow, at 17 months, while Pelsma (22) noticed the first employment of a color name, blue, one month later. The usual date, however, seems to be after the twentieth month and is most frequently stated to be the twenty-second. Gale (13) found pink used first at 23 months; Moore (21) red about the same time; Tilley (Shinn 28) blue in one case and red in another at 22; Bateman (1-2) pink at

21 and 22 months respectively. In some cases white and black are perceived before this, in one instance, Hall (16), black being named as early as the thirteenth month.

Sanford (26) found a child at 21 months to use but one such term and that white, while another child at this age used no color names at all. In contrast to this Miss Shinn's niece recognized and named all the spectrum colors at 22 months with a small percentage of errors.

In published vocabularies of children 2 years old the following data were found. The colors used by each child follow directly after the name of the observer: Sanford (26) pink, blue, brown; another child white, black, red, blue; Pelsma (22) red, blue, green, white, yellow; Gale (13) first child, white, yellow; second child, red, blue, black; third child, none; Bateman (1) first child, pink, white; second child, pink, black, blue; Beyer (3) black, blue, red, tan, white, yellow; Boyd (10) black, red, white, yellow; Holden (19) two children used none; a third child, black and white.

A few vocabularies between the ages of two and three show the following colors used: Bateman (1) 28 months, white, pink, brown; Sanford (26) 30 months, black, white, red, green, blue, brown, pink; Preyer (23) 34 months, red, yellow, black, violet, brown.

From vocabularies of three-year-old children these color terms were culled: Gale (13) black, blue, brown, gray, green, purple, white, yellow; Pelsma (22) blue, black, brown, green, gray, pink, white, red, yellow; Boyd (10) black, blue, red, white; Bush (11) black, blue, brown, gray, green, orange, pink, purple, scarlet, tan, violet, white, yellow; Heilig (18) black, blue, brown, gray, green, orange, pink, red, tan, white, yellow; Bateman (2) blue, brown, pink, red, white; Whipple (32) black, blue, brown, green, orange, red, tan, white, yellow without hesitation, purple and a few others less correctly.

Sanford (26) reports a child of 40 months as using black, white, red, green, blue, brown, pink; another at 42 months used black, blue, green, red, white, yellow.

The next list gives the terms of this kind found in the lists of words used by four-year-old children.

Pelsma (22) blue, black, brown, green, gray, orange, pink, purple, red, tan, white, yellow; Mateer (20) black, blue, brown, green, pink, red, tan, white, yellow; Boyd (10) black, blue, brown, pink, red, white; Rowe (25) black, blue, gray, green, orange, pink, red, white, yellow; Bateman, black, blue, brown, gray, green, pink, purple, orange, red, white, yellow.

In addition to these, Sanford's report shows a color vocabulary of black, blue, green, red, white, yellow at 5 years of age.

Rowe's (25) child at six used purple in addition to those listed above for the fourth year. A number of these observers (Shinn, Hall, Preyer, Bateman) find the color adjectives the last type of this class to be used spontaneously.

In a few cases the progress made by the children in acquiring color terms is noted as follows: Shinn records it—at 16, red; 17, yellow and blue; 18-22 all spectrum colors; Bohn found—at 17, green, yellow; 19, blue, red; 21, gray, white, brown; 25, pink; 26, purple; Bateman's first child took much longer her course being—22, pink; 23, white; 28, brown; 30, red, blue; 37, orange, green, black; 38, yellow, gray; 45, purple; the second child who is not yet through the journey used pink at 21; black 22; blue 24; white 26; and orange at 27.

EXPERIMENTAL OBSERVATIONS

On young children three series of experiments have been carried out on the naming of colors. These are by Binet (4). Preyer (23) and Shinn (27). Their results are shown in the following table.

TABLE I

Observer	Age of child	Per cent correct	Order of discrimination corrected by Miss Shinn for name confusions
Binet	32-38 m. girl		red, blue, green, orange, yellow, pink, violet
Preyer	24-34 m. boy	70.3	yellow, brown, red, violet, pink, orange, green, blue
Shinn	18-21 m. girl	92.7	red, blue, yellow, orange, green, pink, brown, violet

Garbini (14) made a few tests at this age and found the children to name red most easily.

The same investigator (14) tested 600 Italian school children at 6 years of age. Only 35% could name blue, yellow, green, pink, orange, and violet. Tracy (31) gives the following table based upon an examination of German children from 8 to 14 years old by Lobsien. The table shows the percentage of errors made.

TABLE II

Class	Age	Red	Yellow	Orange	Blue	Violet	Indigo	Green
1	13-14	0	0	56	0	31	77	0
2	12	0	0	78	0	44	94	0
3	11	0	2	80	0	16	44	2
4	10	0	0	98	0	67	95	5
5	9	0	2	96	2	77	98	11
6	8	0	19	100	0	100	100	20

Tracy also states that Ziehen, testing children in the Normal School in Jena, found gray, green and brown named wrong or not at all.

Engelsperger and Ziegler (12) investigated 200 children in Munich. These children were just entering school. The results are shown in Table III.

TABLE III

Color	Boys 100		Girls 100	
	Correct	Wrong	Correct	Wrong
Black.....	99	1	98	2
White.....	99	1	98	2
Red.....	82	18	96	4
Blue.....	83	17	90	10
Green.....	79	21	84	16
Yellow.....	68	32	78	22
Violet.....	3	97	4	96
Orange.....	..	100	5	95

These investigators found no color blindness.

Turning now to American investigators, G. S. Hall (16) found in Boston that of children entering school 9% made mistakes in naming red, 13.5% in naming yellow, 14% in naming blue and 15% in naming green.

At about the same period, 1890, Wolfe (33) conducted an extended series of tests on School children in Lincoln, Nebraska. Over 2000 children from 5 to 17+ years of age were examined of whom 382 were from 5 to 7 years old. The following table shows the results.

TABLE IV

Age.....	5		6		7	
Sex.....	M.	F.	M.	F.	M.	F.
Number examined....	28	20	71	77	101	85
White.....	96.4	95.0	98.6	100.0	98.0	100.0
Black.....	100.0	95.0	95.8	96.1	96.0	98.8
Red.....	82.1	100.0	90.1	98.7	97.0	98.8
Blue.....	67.9	95.0	85.9	96.1	91.1	97.7
Yellow.....	57.1	75.0	76.1	83.2	78.2	91.8
Green.....	67.9	90.0	81.7	85.8	88.1	98.8
Pink.....	20.8	73.3	50.0	65.5	40.6	77.0
Orange.....	.0	5.0	5.6	5.2	2.0	9.4
Violet.....	.0	.0	2.8	.0	.0	1.2

TABLE IV—Continued

Age.....	8-10		11-13		14-6		17+	
Sex.....	M.	F.	M.	F.	M.	F.	M.	F.
No. examined.	367	335	274	303	181	177	27	46
White.....	100.0	99.7	100.0	99.7	98.3	100.0	100.0	100.0
Black.....	99.7	99.4	98.2	98.3	98.9	98.3	100.0	93.5
Red.....	98.4	98.8	98.5	99.3	99.5	98.9	92.6	93.5
Blue.....	94.3	96.4	97.8	98.0	98.9	98.3	100.0	97.8
Yellow.....	92.4	97.0	95.6	97.7	98.3	98.9	96.3	95.7
Green.....	89.6	96.4	94.2	98.0	96.1	100.0	96.3	100.0
Pink.....	52.6	88.9	68.3	92.8	79.5	95.4	77.8	93.5
Orange.....	9.8	21.2	18.6	31.7	14.9	24.9	22.2	32.8
Violet.....	.8	.9	2.6	2.3	1.7	3.4	14.8	2.2

The relative accuracy is, therefore, as follows: white, black, red, blue, yellow, green, pink, orange, violet. The next table shows the proportion naming correctly all the colors.

TABLE V

Age	Sex		Age	Sex	
	M.	F.		M.	F.
5	55.4	69.8	12	76.0	78.7
6	65.5	70.1	13	74.3	80.6
7	67.1	74.7	14	76.1	80.6
8	70.2	76.8	15	76.2	79.2
9	71.1	77.8	16	76.7	79.5
10	71.2	78.3	17+	77.8	80.0
11	74.6	80.2			

The girls make very little progress after the eleventh year. The greatest gain of the boys also occurs before this age, yet they are still quite inferior to the girls. The boys continue advancing, until at seventeen there is less difference between the sexes than at any previous period.

Many other tables are given showing especially the character of the errors made.

THE BINET-SIMON TEST

So far as the Binet test of naming red, blue, green and yellow is concerned, Terman and Childs (30) found the following:

TABLE VI

Age	Per cent passing test
4	65
5	74
6	84
7	96
8-12	100

In a similar research for which two thousand children in New Jersey were the subjects, Goddard (15) obtained the following results:

TABLE VII

Age	Number passing	Number failing
5	0	2
6	8	6
7	97	5
8	90	1
9	17	0

This table would indicate the test as fitting best the seventh year which Goddard recommends.

Bobertag (7), however, from an examination of school children in Breslau found:

TABLE VIII

Age	No.	Number right	Number wrong	Girls right	Boys right
5	20	7 or 35%	13 or 65%		
6	58	28 or 48%	30 or 52%	17 or 58%	11 or 38%
7	82	47 or 57%	35 or 43%	27 or 60%	20 or 54%
8	38	34 or 89%	4 or 11%	17 or 89%	17 or 89%

This investigator was "*einigermassen erstaunt*" to learn that but little over half of the seven-year-old children could name these colors. His results seemed to indicate that the test was best left as one for the eighth year for German children. He found the order of discrimination to be as shown in the following table:

TABLE IX

Color	Total	Right
Red.....	178	165
Blue.....	178	139
Yellow.....	178	138
Green.....	178	132

THE INVESTIGATION

For the experimental part of this paper 591 children were examined from the first three grades of the public schools of Missoula, Montana. This is a city of about 15,000 inhabitants, a railroad center, much interested in farming and lum-

bering. It is the seat of the University of Montana. Each child was separately asked to name the colors, generally in a quiet room alone with the investigator, with little to distract or disturb his attention. Every child responded, indeed only a few failed at first to understand the question.

The colors used were the following: white, black, red, blue, yellow, orange, green, purple. In about 150 cases gray and brown were used. The colors were shown to the child in the form of cards 8 x 5 inches. The cards were made of white cardboard of which one surface was covered with several sheets of tissue paper of the desired color. This paper was selected since it could be obtained in colors of the right shades and offered neither a shining nor a too dull surface. Each color was of the purest tone and strongest saturation obtainable. In the case of the green the color was somewhat too light and a few of the younger children confused it with white, altho they could name a more vivid green quickly enough.

The ages of the children were taken as the nearest birthday; a few coming exactly at the half year were taken as the next birthday.

RESULTS

GROUP A—This comprises 151 children. Of these, 85 were entering school for the first time and had received there no color training. Of the 85, only 4 had previously attended kindergarten. The 66 remaining had been to school for 1 semester. 73 were boys, 78 girls. The table shows the results with this group.

TABLE X

Color	Boys				Girls			
	Right		Wrong		Right		Wrong	
	No.	%	No.	%	No.	%	No.	%
White.....	73	100	0	0	78	100	0	0
Black.....	73	100	0	0	78	100	0	0
Red.....	72	98.5	1	1.5	77	98.7	1	1.3
Blue.....	71	97	2	3	76	97.4	2	2.6
Yellow.....	62	85	11	15	78	100	0	0
Orange.....	59	80.5	14	19.5	72	92.2	6	7.8
Green.....	64	86.5	9	13.5	72	92.2	6	7.8
Purple.....	52	68.5	21	31.5	71	90.9	7	9.1

ERRORS—BOYS

Red—The single mistake in naming this color was made by a red-green color-blind boy. He called the red, green.

Blue—purple 1; green 1.

Yellow—brown 1; green 2; orange 5; purple 2; not named 1.

Orange—brown 2; purple 1; yellow 1; red 1; not named 8; blue 1.

Green—gray 1; purple 1; blue 2; yellow 1; red 1 (see note above); not named 3.

Purple—blue 10; pink 2; brown 1; not named 8.

Of these 73 boys, 57 or 78% passed the Binet Test.

41 boys had not attended school before. Of these, 13 or 31.7% failed to name red, blue, green and yellow. Among them were those who made the most errors in this group as for instance one who missed four names and 3 who missed 3 names each. A few of these boys had not yet reached the 6th birthday.

40 made no errors;

14 made 1 mistake (9 with purple; 4 with orange; 1 with green);

11 made 2 mistakes;

5 made 3 mistakes;

3 made 4 mistakes.

ERRORS—GIRLS

Red—not named 1 (same child failed to name blue, purple, green).

Blue—not named 1; purple 1.

Orange—not named 3; pink 1; yellow 2.

Green—not named 3; blue 3.

Purple—not named 1; blue 4.

Of these girls, 71 or 91% passed the Binet test.

44 girls in this group had not been to school before; of these only 3 failed to name the four principal colors. The other 3 failing this test had been to school for one semester. One was clearly deficient mentally as was one girl who did pass the test.

65 made no errors;

6 made 1 error;

5 made 2 errors;

1 made 3 errors;

1 made 4 errors.

Combined boys & girls of Group A.—151 children.

128 or 84.5% passed the Binet test.

106 or 70% named all the colors.

20 or 13.9% made only 1 mistake.

GROUP B—In this group are 160 children, 75 boys and 85 girls, all 7 years of age.

Boys.

White and black were named correctly by all. Red and blue were rightly named by all but one.

Two failed to name yellow (2.67%); 13, orange (17.3%); 3, green (4%); and 9, purple (12%).

70, or 93.3%, passed the Binet test.

57, or 75.8%, named all the colors.

11 made 1 error;

5 made 2 errors;

1 made 3 errors;

1 made 5 errors.

This last subject interchanged red and blue maintaining this confusion in naming a dozen or more articles of these colors. He failed to name yellow and orange and when pressed as to the latter called it blue. In addition he termed purple blue. Of the errors in naming orange the following were noted: pink, 4; yellow, 2; brown, 3; white, 1; not named, 2; green, 1. In naming purple the following mistakes were made: blue, 6; pink, 1; not named, 2. Green was called, yellow, 1; white, 1; and not named, 1.

Girls.

All the 85 girls in this group named white, black, red and blue correctly. One named all but orange (which she called "bik") and two all but purple. Of the remaining 3, two were not able to name yellow and orange while the last could not name yellow, green or purple. These three were found by other tests and questions, made at the same time, two to be deficient mentally and one at least retarded. It may be said, then, that of the normal children all could pass the Binet test while of the whole group 96.4% could do so.

Combined Boys and Girls—Group B

152, or 94.8%, passed the color test.

136, or 85%, named all the colors.

GROUP C—This group comprised 179 children, eight years old, of whom 96 were boys and 83 girls.

Boys.

Of these 96 boys all but 4 named all the colors correctly; 3 misnamed purple, blue, while one was unable to name green.

98.9% passed the Binet test.

95.8% named all the colors correctly.

Girls.

Of the 83 girls all but 2 named the colors without error; 1 called purple, blue, and 1 failed to name orange.

100% passed the Binet test.

97.5% named all the colors.

Combined Boys and Girls of Group C.

99.4% passed the test.

96.6% named all the colors.

GROUP D—In this group were 40 boys and 32 girls, age nine years. Of the 72, 2 boys misnamed purple (blue and pink), while one girl could not identify orange.

100% passed the test.

96% named all the colors.

GROUP E—29 children, 10-11 years old, all retarded in school. 28 named all colors correctly while one boy who was quite stupid called orange, brown and had no name for purple at all.

100% passed the Binet test.

RECAPITULATION
Giving percentage of correct responses
 TABLE XI

Group	Age	Sex	No.	White	Black	Red	Blue	Yellow	Orange	Green	Purple	All correct	Binet Test
A	6	Boy.....	73	100	100	98.5	97	85	80.5	86.5	68.5	54.7	78
		Girl.....	78	100	100	98.7	97.4	100	92.2	92.2	90.9	84.5	91
		Both.....	151	100	100	98.6	97.2	92.5	86.3	89.3	79.7	70	84.5
B	7	Boy.....	75	100	100	98.7	98.7	97.3	82.7	96	88	75.8	93.3
		Girl.....	85	100	100	100	100	96.5	96.5	98.8	96.5	94.2	96.4
		Both.....	160	100	100	99.3	99.3	96.9	89.6	97.4	92.2	85	94.8
C	8	Boy.....	96	100	100	100	100	100	100	98.9	96.7	95.8	98.9
		Girl.....	83	100	100	100	100	100	98.7	100	98.7	97.5	100
		Both.....	179	100	100	100	100	100	99.3	99.4	97.2	96.6	99.4
D	9	Boy.....	40	100	100	100	100	100	100	100	95	95	100
		Girl.....	32	100	100	100	100	100	97	100	100	97	100
		Both.....	72	100	100	100	100	100	98.5	100	97.5	96	100
E	10-11	Both.....	29	100	100	100	100	100	96.6	100	96.6	96.6	100
A-E	6-11	Both.....	591	100	100	99.5	99.3	97.8	94	97.2	92.6	88.8	95.7

DISCUSSION

The material collected shows that children may begin to use color terms as early as the sixteenth month, altho this is somewhat unusual. A date after the twentieth month seems to be that recorded by most observers, while in some cases none of these terms were used until the second birthday. But even after one or two names are used spontaneously the ability to acquire others and use them correctly appears to be quite variable. For instance, Miss Shinn's niece knew all the spectrum colors at 22 months, an age when most children are making their first efforts in this direction. Bohn's child had used seven color names by the twenty-first month while another child of the age knew only white. At 2 years of age one child had a color vocabulary of 6 words, 1 of 5, 2 of 4, 3 of 3, 2 of 2, while 4 used none at all. Of the nine children white and blue were each used by 5, red, black and yellow by 4, pink by 3, green, brown and tan only by 1, while orange and purple do not appear at all. Of the seven three-year-children, 5 used from 8 to 13 terms, 1 used 5, 1 used 4 colors. Red and pink are lacking in one case, almost surely an error in observation. Purple appears in only two lists, orange in three. Four children by their fourth birthday were using from 6 to 18 names, but purple appears in only 1 list and orange in but few of these. A single vocabulary at 5 shows the use of 6 names among which orange and purple do not appear. Red or its shade of pink seems to be the color generally first perceived and named but blue and yellow share this distinction, altho much less frequently. White and black seem to be sensed early. The names and impressions are only correlated later, but once learned they are known for good. Orange and purple are learned in most cases much later.

Turning now to larger investigations, that by Wolfe agrees in most respects with the above. White, black and red are the colors most easily named while none of the 48 at 5 years could name orange or violet. Garbini found that only 35% of his Italian, 6 year-old, children could name blue, yellow, green, orange and violet. Of 200 children in München only 65% of the boys could name yellow, only 3% purple, and none orange, while only 4% and 5% respectively of the girls could name the last two colors. Blue in both cases ranked higher than red. In Jena green was named wrongly or not at all. Purple and orange were not used. Still more striking are Lobsien's results who found no 8 year old children who could name purple and orange; indeed, over half the children 13 and older made errors in the last case. No mistakes at all were noted with red and few with blue.

With the above results those of the present investigation are sharply contrasted. The lowest percentage of correct answers was in the case of six year old boys for purple. But even here 68% responded correctly as compared with 35% at most of Italian children and 3% in Munich. While in Jena none apparently could name green, 86% could do so in Missoula. With eight year old children the dissimilarity is even more marked since in Missoula over 99% named orange and over 97% named purple correctly while none observed by Lobsien could do either. In Munich 84% of the children only could name red when just entering school while over 98% did so in Montana.

The same point is emphasized in connection with the Binet test. From the vocabularies it is seen that children as young as 22 months can name the four principal colors without hesitation or mistake. An example is the niece of Miss Shinn who concludes from her study that little children can easily be taught these terms. The little girl in question seems to have developed rapidly and perhaps Miss Shinn is somewhat optimistic. However, Pelsma's child could name these colors at 2 years while at 3 those observed by Bush, Heilig and Whipple could do the same. The elder child noted by Bateman first was able to pass the test in the thirty-eighth month and two recorded by Sanford used these four names before the forty-second month. The four-year-old vocabularies collected by Mateer and Rowe show the same ability.

In a few of the above cases it is not plain whether the child made errors and how many in the use of the terms but in most of the notes the point is clear.

Of a group of 30 children observed by the author who were from 4 to 6 years old and attending kindergarten, at least 21 were able to pass this test.

The results of the present investigation are in harmony with those of Terman and Childs who show that in California 65% of the four-year-old children and 74% of the five-year-olds could name the colors constituting the test. The following table compares their results with those found in Missoula and shows the close agreement reached.

TABLE XII

Age	Terman and Childs	Bateman
4	65	...
5	74	...
6	84	84.5
7	96	94.8
8	100	99.4
9+	100	100

These figures are about the same as Goddard found for ages 7-8-9, but much better than for his 6 year olds. However, only 14 of the latter age seem to have been tested in this respect by him.

With the conclusions of foreign investigators, however, the present work is not in harmony. Bobertag's careful research on the Binet scale shows only 57% of 82 children in Breslau able to pass the test in question at 7 years and only 89% at 8. Binet as already noted first placed this among the qualifications for a mental age of 8, altho afterwards placing it among the tests for the year earlier.

There seems to be then a real difference between European and American children in this respect. That this work should show an improvement on the part of children over those examined by Wolfe is understandable when it is known that the children then in the Lincoln schools received no color training at all, as well as when the recent wave of interest in children, kindergarten and Montessori in this country is considered. But why contemporaneous children in the two continents should differ so much is not clear. American children are said to begin talking at an earlier age than those abroad and to progress somewhat more rapidly at first as well, so perhaps some of the difference may be ascribed to this. But whether the rest is due to lack of interest in the home or training at school or a real difference in ability does not appear.

Stern (29) says that, "in general for a test to be valid for a certain level, the requirement is that approximately 75 per cent of all children at this age shall be able to pass the test;" and "that test is most useful that shows the most decided advance with age." From the first consideration Terman and Childs' work shows the test to fit best the fifth year while their work coupled with the present investigation would seem to indicate the same to be true and marks the upper age limit as six. The second consideration mentioned by Stern may operate against this test being used at all if one better can be found to take its place since the ability to name these colors apparently increases so gradually with age. This objection would be strengthened if 50-60% of 3 year old children could pass the test. Furthermore, as Stern points out, to transfer simply on the above basis any test from one year to another disturbs the whole value of the tests at the latter level, and necessitates a general rearrangement. Again if the test be included in those for the eighth or even seventh year it is somewhat incongruous to find children (Shinn, Pelsma) not otherwise precocious passing it by the second

or third birthday. As is true with the whole subject both in general and with special topics, more information is needed before the fate of this particular test can be determined.

Sex Difference—This paper brings out again the well known fact that boys show much less discrimination for colors than girls since for all the groups 80.4% of the former as against 94.4% of the latter named all the colors correctly.

Effect of School Training—In the first group 85 children had been to school for only a week or two and had received no training in color naming. Here 71.2% passed the Binet test while of those who had been to school for 1 semester 89% passed. In the latter group there were many less errors made in the other colors as well.

Significant Confusions—When a child really does not know a color name he is apt to say anything that occurs to him in the nature of a guess which accounts for some of the queer errors noted in this as well as in other investigations. Some of the errors are so consistent however that they deserve special mention.

There was noted a tendency to name weakly saturated colors white, and the darker ones black. Some confusion was shown with blue and green and with yellow and orange. The mistakes with orange consisted in calling it pink or brown. Purple was most often miscalled blue but sometimes pink. The numerous failures to recognize these two colors may be due partly to the fact that they are used rather sparingly in dress and decoration.

SUMMARY

1. 591 children in the first three grades of the Missoula schools were examined with regard to their ability to name colors.

2. Of these children, 88% named correctly white, black, red, blue, yellow, orange, green and purple.

3. 95.7% passed the Binet test (VIII, 3 or VII, 3) requiring them to name red, blue, green, yellow.

4. The results compared with other American observations show that the above test is one plainly not to be placed higher than the 7th year for American children, better in the 6th year and even possibly in the 5th year.

5. A semester's school training markedly increases the ability to name colors.

6. The recognition and naming of colors is weakest in the case of orange and purple.

7. American children appear to have more ability in this respect than French, Italian or German children.

8. It is probable that the majority of American children could be taught to name correctly the principal colors by the fourth birthday.

9. Some confusions between colors are noted upon which attention can be concentrated in kindergarten and school.

CONCLUSION

In conclusion it is a great pleasure to thank for their necessary and kind co-operation in this undertaking Mr. J. U. Williams and Miss Alma Binzel, Superintendent and Assistant Superintendent of Schools in Missoula. Finally, special thanks are due Miss Gertrude Zerr who assisted the author in taking most of the observations for this work.

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THE NEW-BORN CHILD

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At present the knowledge of the condition of the new-born child's body, senses and reactions is so scattered that it is difficult for one to form an idea that is even approximately complete. It seems worth while, therefore, to give a summary of the more important facts, although it can not be complete in the allotted space.

The data on height and weight are too well known to detain us. At birth the average boy weighs 3.7 lbs., with the limits at 3 and 12, but 87% of the cases between 6 and 9 lbs., and the average girl is slightly lighter. The average boys' birth height is 19.68 in., with the limits at 15 and 24. The following figures seem to be generally agreed on as averages for other proportions: The circumference of the thorax measured just below the nipples and the angles of the scapulae averages 13 in.; of the head measured at the level of the occipital protuberance, $13\frac{4}{5}$ in.; of the abdomen, 14.3 in. During the first six months the head circumference grows about 3 in.; during the second six, 1.8 in., and thence more slowly. Forsyth states that at birth the head is $\frac{1}{4}$ the length of the body while in adults it is only $\frac{1}{8}$. In the new-born child the trunk is longer than the leg or the arm, and the arm is longer than the leg. The entire arm has the same length relative to the whole body, but the forearm and hand are longer relative to the upper arm than in the adult—a characteristic also of anthropoid apes. We thus get a creature with relatively very large head, short legs, and long body and arms.

Again, Dekker calls attention to the fact that the small size of the upper and lower jaws brings the mouth closer to the receding chin on one side and to the eyes and the flat nose on the other, while the cranium seems to bulge over the face and press it down.

The bones of the new-born have a characteristic fibrillar structure, rich in blood vessels and the components of marrow, while the periosteum has a layer rich in cells. The periosteum grows very rapidly in thickness but the lamellae, Gundobin says, are still very imperfect in the ninth month.

By the time the child is two years old the bones are very similar in structure to those of an adult.

The epidermis is very thin and the individual cells are of nearly adult size. The sebaceous glands are active from about the fifth month of prenatal life, but the development of the sweat glands is not yet well known. The hair is fully developed. The papillae of the soles are distinct but those of the back and head are not so complete. The capillaries of the skin are relatively larger than in the adult. The tissue of the true skin is well developed but the individual fat cells are smaller. The Paccinian bodies are well developed and also the arrectores pilorum.

With these characteristics, the baby is peculiarly subject to parasitic diseases of the skin, and the skin serves far more as an organ of respiration than in the adult. It also gives off more water (Bouchard estimates about 60 g. in 24 hours). At the same time it does not regulate the heat of the body well.

The alimentary canal of the new-born child has important differences from that of the adult. The relative weight of the salivary glands is no greater than in the adult, and their growth in weight in the first year is at the same rate as the total body weight. At birth the saliva is relatively small in amount, but Korowin and Schiffer seem to have shown that in chemical composition and function it is not very different from the adult's, especially in that it contains ptyalin. The small amount secreted at first is attributed to the lack of development of the cortical center. The stomach is entirely covered in front by the liver, and its long axis lies obliquely. It is little developed at the fundus and grows with especial rapidity there. The pyloric section also broadens so that the stomach as a whole becomes longer. Forsyth gives the following estimate of the capacity of the stomach of children of different weights (which he considers more significant than age): for a child weighing $6\frac{1}{2}$ lbs. the capacity of the stomach is approximately 2 oz.; for 9 lbs., 3 oz.; for 11 lbs., 4 oz.; for 15 lbs., 6 oz.; for 20 lbs., $9\frac{2}{3}$ oz. All the digestive juices are present at birth, except free hydrochloric acid, but the acidity is relatively small and the pepsin small in amount. The movements are more energetic and absorption more rapid than in adults.

The liver is probably a little heavier proportionately to body weight than in adults, though the figures given vary widely, from $\frac{1}{18}$ to $\frac{1}{40}$, while in the adult it is $\frac{1}{28}$ to $\frac{1}{33}$. The weight is doubled by the ninth or tenth month and has in-

creased about $3\frac{1}{2}$ fold by the end of the third year. At birth it forms a relatively small amount of bile, its function of oxidation seems very imperfect, and also its power to neutralize poisonous substances.

Like the stomach, the pancreas secretes at birth but in relatively small quantities. It doubles its weight in the first two or three months, coincidently with its increase in functioning. The entire alimentary canal increases about twenty fold in weight from birth to maturity.

The total length at birth is about six times that of the body and at maturity about five times, the large intestine growing relatively more than the small. In the first three years this growth is especially rapid. The mucous membrane of the intestines is more developed than the muscular layer and is richer in blood than in the adult. It contains relatively more lymph vessels, indicating that its function is more that of absorbing than of digesting, as is also indicated in the poor muscular and nervous development, the delicacy of the membrane and its large amount of blood.

The kidneys are relatively large at birth and the supra renals as large as in the adult. The urine increases rapidly in amount from about 6 oz. a day at the end of the first week to 16 at the end of the sixth month, Forsyth estimating that for every 100 cc. of milk taken 60 of urine are passed. He also calls attention to the fact that more than 80% of the food energy is used to make good the great losses of heat caused by the relatively large body surface of the baby (nearly three times that of an adult, relative to body weight, according to Vierordt). In general, Camerer estimates that per kgm. of body weight the child takes the same amount of protein as an adult, but for carbohydrates the proportion is 11:5; for fats, 4:1, and Forsyth adds, for water, 4:1.

Data as to the weight of the heart at birth differ. Falk found it to be 23.37 g. ($7/9$ oz.) in boys, doubling in weight by the eighth month and tripling between the second and third year. In the fifth year its weight was four-fold and in the sixteenth year eleven-fold that at birth. It grows in all dimensions but a little more rapidly in length than in breadth. The irregularity of the heart beat at birth is due to the fact that the inhibitory cortical centers are not developed. The frequency lessens with age and also inversely with size. Vierordt gives for the average number per minute at birth, 135-140 and for the first week, 123-138, while Pokrowski for the first days after birth gives it as 110-120. Blood pressure is very low (60-61 as estimated by Ssladkoff with Gärtner's

apparatus). It oscillates somewhat during the first month but then remains almost stationary till the ninth year.

The weight of the lungs depends upon the amount of blood in them and therefore the figures given vary from 42 g. to 57 g. (an average of $1\frac{1}{2}$ oz.). By the end of the third month they nearly double their weight, but during life keep approximately the same relation to body weight as a whole as at birth, viz., 1:43 or 1:59. Vital capacity at birth is not known. Frequency of respiration at birth is given as 44, gradually diminishing to 30 by the end of the first year.

The lymph glands are relatively large and active in infancy, as are the spleen, thyroid and thymus.

The infant's blood has slightly less specific gravity than the adult's, but is richer in red and white corpuscles and in hemoglobin. The child's blood at birth, however, is far more like that of the adult as the placental circulation has just ceased.

We have already referred to the growth of the skull. The growth of the brain is a different matter. The weight of the total brain is given as from 290 to 415 g. for boys and 283 to 400 g. for girls, with the average as given by Gundobin at 389 for boys and 354 for girls. There is rather general agreement that by the eighth or ninth month it doubles its birth weight and triples it during the third year. Relative to body weight the brain at birth is about as 1:7, while in the sixteenth year the proportion is about 1:17.

As compared with the adult, the infant's cortex has very incompletely developed convolutions but after the fifth week these develop rapidly, and development of the cells is very rapid even in the first week, the various layers being visible by the second week, and almost the same as in the adult by the 18th to 20th months. Authorities differ as to whether any medullated fibers are present at birth in the cortex proper, but all agree that after birth at least they develop very rapidly. It is probable that individuals may differ in the degree of development at birth. At birth the cortical centers are still undeveloped, but their power to function increases rapidly.

We know little relatively about the spinal cord at birth. Its weight is estimated at about 4 g., and it probably doubles its weight in the first year and then grows much more slowly, not tripling it until about the fifteenth. It probably doubles in thickness during the first two years and then increases very little more in this dimension. After the second year it grows in weight more rapidly than the brain but before much less rapidly. Here, too, authorities differ as to when the myelin sheath is first to be found in any of the fibers of the cord, but all agree that the paths of conduction are functioning at

birth and even in the ninth prenatal month, with the exception of the pyramidal fibers which develop later than the others. Ssljotoff and Gundobin believe that these become medullated between the second and third month after birth, with some exceptions.

As to the peripheral nerves, the myelin sheath is first formed about the motor nerves from brain and cord in the fifth month of prenatal life, then in the mixed and finally in the purely sensory. At birth the roots of the motor nerves have the sheath while the others, except the auditory, have many incomplete sheaths and free axis cylinders. By the third year these can rarely be found.

From this incomplete development one would expect to find that at birth the child is less easily stimulated than later. The reflexes which pass through the brain, such as the jaw, pupillary and nostril reflex, are frequently lacking at birth or are very weak and develop slowly; those with centers in the cord, like the patellar and Achilles reflex, are present after the first week.

Turning now to the special sense organs, Weiss gives for the weight of the eyeball at birth, 2.29 g., which somewhat more than triples by maturity. Its growth is closely parallel to that of the brain. The three dimensions differ relatively more than in the adult, and the new-born child is usually hypermetropic, according to the measurements of Merkel and Orr. So rapid is growth in some dimensions that in a child of a few months the three dimensions are almost the same. A striking characteristic is that in the new-born child the foveas are as far apart absolutely as in the adult, so that no later growth occurs here and it is not possible at first to fixate for binocular vision. The cornea is nearly as large as in the adult. The lens is nearly spherical, projecting front and back more than in the adult eye, and gradually flattening so that its length from front to back lessens not only relatively but absolutely. It grows most rapidly during the first year. The iris, as is well known, has little pigmentation. The choroid is as thick as in the adult and so the eye is especially well supplied with blood. The ciliary muscle is about $\frac{2}{3}$ as long and $\frac{1}{2}$ as thick as in the adult and grows very rapidly in the first year. It contains both circular and long muscle fibers. Merkel and Orr found the retina thin and the layer of rods lacking at the *ora serrata*.

Given these conditions, the functioning of the eyes is necessarily imperfect at birth. Coördinated movements of the balls are rare before the fifth week, and Gundobin says that up and down movements appear considerably later than lateral.

At birth light and touching the lids causes them to close, but the pupillary reflex does not appear till the end of the fifth week. The reflex wink when an object approaches the eyes does not appear till the fifth month, Gundobin says, but other observers place it between the sixth and ninth weeks. At birth, therefore, while the child is not blind, the lack of convergence and accommodation and the relative inability to follow an object, must limit his visual world to indistinct blurs. Even during the first week attempts are made by some children to follow light, and from the second week there are attempts to fixate bright objects. Convergence is usually fairly well advanced by the sixth week, and accommodation begins about the eighth week, the more distinct vision serving as a great intellectual stimulus.

Some parts of the ear are practically of adult size and form, while others do not complete their growth till puberty. The bones in which the ear lies are still growing rapidly, are relatively smooth on the inner surface while later they show indentations corresponding to the convolutions, and the various openings for the passage of nerves and blood vessels are still forming or closing. The fissures are not yet closed between the bones. The external meatus has a more vertical direction than in the adult, which during the first year gradually becomes horizontal. Its walls lie close together and it is closed at birth with a mass of epithelial cells and vernix caseosa. Its sebaceous glands, Alzheimer found, end in the hair follicles, whereas in the adult they end in the cutis. The position of the tympanic membrane also alters with growth, the angles relative to the surrounding walls becoming greater. The outer and inner layers of the membrane seem thicker than in the adult, while the fibrous middle layer and the size of the membrane are much as in the adult. The bones of the middle ear have adult size. The membrane lining of the tympanic cavity is especially rich in cells and blood vessels, and contains fewer spindle shaped fibers and more round and oval than in the adult. The Eustachian tube lies more nearly horizontal than in the adult. The bony labyrinth of the internal ear is of almost adult size.

As to the hearing of the new-born child, formerly it was stated that he was deaf for a day or two, but later observations do not confirm this assertion. In testing hearing it is necessary of course to eliminate the possibility of jars—such as come with the banging of a door—and to get only sound. Unfortunately, observers do not usually describe the sounds used as stimuli very definitely. The Sterns note that while

many new-born children are deaf a day or two, not all are, though doubtless all have much dulled sound sensations on account of the middle ear being filled with amniotic fluid. Peterson, on the other hand, experimenting with a rattle which he is confident eliminates the possibility of jars, tested 48 children within six hours of birth, 11 of them within one hour and 1 within ten minutes, and in every case obtained a reaction of squirming, moving, starting or crying. During the first day 139 boys and 137 girls squirmed or made some other slight movement at the sound. Genzmer also obtained reactions from 15 infants during the first day to the sound of a bell, and Mrs. McLeish noticed that her little girl stopped fretting when talked to, when she was only 14 hours old. She states specifically that the child was not touched. Other observers of individual children, Talbot, Cramausse, Tracy, Preyer, Shinn, Sully and Baldwin put the first sound reactions variously from three hours to three weeks after birth. If we knew the pitch and intensity of the stimuli we should have some real knowledge of the child's hearing at birth. As it is, we can only say that at birth doubtless the child can hear loud sounds, and probably shrill and intense ones better than low ones. But we do not know the limits either of intensity or pitch, nor the individual variations.

The nose of the new-born child is small, short and flat; the cavities little developed, the cavity above the bridge lacking and the lower portion of the nasal passage undeveloped. The mucous membrane is very delicate and rich in blood vessels. The lachrymal canal is also undeveloped relatively, so that infection is easily carried from nose to eye.

The sense of smell at birth has not been studied by many observers. Kussmaul, using asafetida and ammonia fumes got the same reactions as with adults. Peterson tested 14 children less than six hours old with asafetida and ten responded with sucking movements. Out of six tested with oil of geranium four sucked and out of 21 tested with compound spirits of orange 18 sucked.

The taste buds are more widely scattered over the mouth cavity in the new-born child than in the adult, sometimes being found on the cheeks and the back of the nasal passages as well as on the tongue. All observers agree that the new-born reacts to salt, sour, bitter and sweet. To bitter, whether the stimulus was tincture of gentian or solution of quinine, most children react by grimaces and movements of rejection and very few by continued sucking. To sweet on the other hand, nearly all respond by contented sucking but a few do not. To acids, most react by rejecting. To a concentrated

solution of salt 27 out of 28 children tested by Peterson within six hours after birth reacted by sucking, and though a few grimaced at the first taste there were very few expressions of dislike and no spitting out. Of children tested the first week, 503 boys and girls sucked contentedly while 295 showed discomfort.

If we turn now to other reactions involving particularly the larger skeletal muscles, we should first note that these muscles are estimated to increase 48 fold in weight from birth to maturity, forming about 43% of the body weight of the adult male. Vierordt estimates that at birth they form only 23% of the total body weight. In structure they differ somewhat from the adult also. The muscle fiber is relatively thin; the nuclei are closer together, of roundish form and often relatively large. In cross section the fibers appear round as a rule though there are also some polygonal ones. The interstitial cellular tissue is unusually rich in cell elements. Westphal's studies are thus confirmed by the later ones of Woizechowski and Narbutt. The chemical analyses made by Baimakoff show that there is a larger percent of water, and a smaller percent of solids, albuminoids, ash and iron.

We have already noted the imperfect development of the cortical centers at birth and the fact that as a result certain reflexes are impossible, while all are imperfect, as appears in the various periodic reflexes necessary to sustain life, and also the eye reflexes. The group of reflex and instinctive acts focussing about the mouth is more perfect than others. Sucking is usually present, but if the child is weak it may have to be taught; swallowing occurs before birth; licking has been observed on the first day and also sneezing. Biting and chewing do not usually appear before the fourth month, but may come before any teeth are through.

Two characteristic groups of reflexes are the responses to stimuli of the soles and palms. Within five minutes after birth if the soles are lightly tickled the toes will spread out and usually the legs will be drawn up. In a few cases flexing of the toes occurs. If the palm is touched the fingers will clasp and the grasp is frequently strong enough to support the baby's weight, with the elbows flexed. Robinson, testing 60 new-born children, found that they could hang for a time varying from two seconds to one minute and their strength of grip increased up to the third week, afterwards diminishing. Other observations, however, show that the grasp may be weak or even lacking in some cases.

The so-called impulsive or spontaneous movements, resulting from nutritive changes within the motor centre, with no

discoverable stimulus outside the centre and so no sensory factors, are numerous and vigorous at birth in proportion as the child is healthy, but their variety is not great. Arms and legs stretch and bend, but, Trettien says, always forward and backward, up and down, never out and in. Fingers and toes spread and bend, face muscles tense and relax, eyeballs move with the lids closed, crowings and babblings occur. Mumford and others believe that many of these movements, such as the swimming movements are vestiges of former useful ones, instincts well nigh atrophied. The habitual posture of the infant approximates the prenatal: legs bent at hips and knees, feet crossed and toes curled down over the soles; arms lying on the chest, bent at elbows and wrists, and fingers closed, with the shoulders also drawn together. That is, the post-natal development would seem to be to large degree an uncurling of the child's body and in this the head on the whole leads.

The ability of children to lift the head at birth varies considerably. The neck muscles, small at birth, grow by maturity to nine times their original size. Few can raise the head unsupported on the first day. Most observations do not note it till the third day and then only for an instant. Peterson records a stiffening of the neck muscles, or attempts at raising the head in 142 children during the first week, but success in only 31 cases. Head and shoulders were lifted during the first week by three boys and one girl. Demme's observations on 150 children show that most children can hold the head up continuously, if strong, between the third and fourth months, but if weak not till between the fifth and sixth months or later. The observations of Preyer, Shinn and others also agree with these. Even before accommodation and convergence are established the child has incentives to raising and holding the head up, in his attempts to reach the breast and hold himself there, and to follow and hold lights or bright moving objects. After accommodation and convergence are established, when the visual world has become much clearer, the longing to look causes far more strenuous efforts to hold up the head, and to turn it in all directions. Coincidentally with this of course go movements of all the upper part of the body, straightening of the back and shoulders, reaching movements of the arms, and in the stress of excitement leg movements as well. To trace the gradual development of voluntary movement from these reflex and instinctive responses is not our task here however.

The act of sucking is so important to the infant's well-being besides being so well developed at birth that various

studies have been made of its mechanism. It involves all parts of the mouth—soft and hard palates, cheeks, uvula, gums and lips, besides the characteristic pad of fat in the cheeks which supports the buccinator muscle, and prevents the cheeks from being drawn in too much. When the nipple is taken into the mouth the tongue curves about it at the margins and press it against the roof of the mouth, at the same time driving out much of the air. The pressure is then released by dropping the lower jaw, which of course carries down the tongue and enlarges the size of the cavity. Attempts have been made, but with widely varying results, to determine the amount of pressure used. Thus Basch says that in the first days of life the jaw pressure is 100 to 300 g., and at a month, 800 g. He also measured the pressure necessary to draw out the milk, and concludes that without the pressure from the jaws nursing would be ineffective. Cramer, on the other hand, believes that the changes in air pressure and the use of the tongue, the *Aspirationenergie*, are sufficient, but the attempts by different investigators to measure this have given such widely different results that no conclusions can be drawn at present.

In the last few years the Freudians have called attention emphatically to the significance of sucking for later development, believing that irregularities in feeding and the formation of greedy and sensuous habits here lay the basis for later sex abnormalities, while on the other hand the correction of such tendencies as soon as they appear may avoid serious nervous troubles later on. That is, even if we assume that the child gets the right kind and amount of food, it is also very important that he should get it in the right way, neither with too much ease nor difficulty; never with pain and dissatisfaction, and on the other hand, never with the sensual abandon that is a picture *in petto* of adult gormandizing and sensuality. Even at this early stage temperance and control must begin. From a somewhat different angle, the transference of the Pawlow experiments to children, has also stressed the fact that the child's knowledge, will and feeling focus first about food getting and in all probability radiate out from this activity to what we consider the purely intellectual and abstract. The face and the special sense organs have developed around the upper end of the alimentary canal as aids in getting food, and in a similar way perception, memory and the higher thought processes have appeared as aids in more and more complicated and indirect methods of self-preservation. So, inversely, if good habits are formed in the infant's food getting the basis is being laid not only for

physical health but for mental and moral normality or superiority.

In the new-born child the larynx is relatively larger than in the adult, somewhat funnel shaped, with the front walls meeting in a bow. The epiglottis has something the shape of a canal, while in the adult it is very slightly concave. The larynx lies higher in the throat than in the adult, and the vocal cords are relatively shorter, growing very rapidly during the first year and again at puberty. The positions of the various bones are also somewhat different relative to each other.

The first cry of the new-born child should be clear and distinct, and if feeble it usually indicates lack of vitality. It is purely reflex, but even by the second day the Sterns note that the difference between crying and quiet indicates the difference between discomfort and comfort. Deaf infants make almost the same noises as hearing ones, so that the deafness may be unnoticed for months. At first undifferentiated, within a few weeks the hunger cry differentiates from that of weakness and some time during the first three months the child begins to use pleasure sounds, laughs and lalling. A persistent cry not due to hunger or cold shows some pain, and if paroxysmal, with the feet drawn up and abdomen distended, it may mean colic pains. Peevish whining indicates poor health. Cotton says there is no such thing as a meaningless cry, and indicates the characteristic cries thus: shrill shrieks at long intervals often accompany inflammation of the brain; short suppressed cries, inflammation of the lungs; sudden screaming at night, night terrors; cries after swallowing, sore throat, etc. To the little baby these cries are of course not expressive at first, but as they bring help and relief they come by degrees to be used as symbols, that is as crude words. Thence the development of speech is a constant increase in complexity and richness.

What can we say then of the psychical condition of the new-born child, or is it more desirable to say nothing except what we can put into behavioristic terms? First we should note that different though the surrounding conditions are before and after birth, increasing knowledge makes us realize more and more that the reactions of the child are not so different as we should expect. In prematurely born children, even so early as the seventh month, the special senses are ready to function apparently as well as in children born at full term, and this leads to a consensus of opinion that probably there are at least occasional stimuli for these senses and reactions to them. We find such terms as "dulled feelings or sensations," "vague or diffused consciousness," used to describe

the psychic prenatal state. It is also said to be a condition of sleep with now and then dreams. Ferenczi assumes a real though subconscious psychic life characterized by the feeling of *Allmacht*, the feeling that one has all one wants and can desire nothing more. Not only this, but so agreeable is this condition that after birth, he believes, all the instinctive strivings both of the child and the adult are in the direction of reproducing this happy state, preferably by getting everything they want, but failing that by day-dreams and by recourse to sleep itself, which of all states is closest to the prenatal. Whether or not this is a true account, it is certainly true that the new-born child sleeps some twenty hours out of each twenty-four, and that even when waking its activities and reactions are largely or wholly reflex, instinctive and impulsive, not voluntary. The condition of the cortex makes it impossible that stimuli should become associated at first, so that if ever there is a period when the human being's responses are purely mechanical it is in these first weeks. We assume, to be sure, that sensations and pleasure and pain states are present, and that those from the organic processes have a different quality than those from the special sense organs, and give the basis for the difference between self and the external world, but the isolation of each sensation or feeling, even when it exists at the same time that others do, makes a condition difficult for us to conceive. Is the new-born child's consciousness just an aggregate, not a unity, of feelings and sensations (including of course the feelings and sensations of the motor reactions)? And is his psychical development simply a progress in reducing the multiplicity of his coexistent psychic states to a unity by getting all the associative bonds possible not only between all the cortical centers but between the cortical and the spinal and sympathetic ganglia. As we try to get a definite conception of embryonic development we get a strong impression of cells or groups of cells developing at first more or less independently of each other but forced to adapt to each other on account of the physical pressures exerted, the exigencies of the food supply, etc., in a bewildering multiplicity of details. And again, as we observe the functioning of the organs of the new-born child, we get similarly the impression that while they usually work together enough to keep the body going as a single organism, they are by no means harmonious. Though the condition is far from the early animal stage in which division of the cells will result in two perfect beings, it is also far from the adult engrossed in some complicated activity such as giving a speech, where each organ acts on and is acted on by every other and

the whole personality influences others like itself for some definite end. On the other hand, the rapidity with which the learning process goes on in the first year of life is so great that at the end the child is already entering upon the human heritage of speech and the erect posture. He has voluntary control of the larger and many of the smaller muscles and can inhibit many movements. He can use his body as a tool to gain a desired end.

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THE WAR-GAME. A PASTIME OF THE GERMAN ARMY-OFFICER

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An essential part in perfecting the tactical proficiency of the German army officer is played by the "*Kriegspiel*" or war-game. Although of comparatively recent origin, it has occupied for a number of years, and does now, a prominent place on the winter-programme of German army officers of all branches of the service. In the original sense the term "war-game" was applied to all tactical exercises, executed on a drawing or a relief, with a view to objectively supplementing instruction in the elements of knowledge which is required by commanders of troops of various grades. Certain problems were set and solved by the instructor co-operating incessantly with the players, whereby the instructor took one side and the players constituted the opposition, or the players were divided into opposing forces whose movements were supervised and criticized step by step by the instructor. As played more recently, however, the war-game has outgrown these earlier exercises of a mere theoretical nature. Its aim now is a representation of actual conditions of warfare and, as a consequence, it has become so practical that it may be defined as "playing at war" as differentiated only from really "being at war." The required knowledge is gained no longer by instruction merely, but by experience,—the contemplation of consequences accruing from the commanding officer's own actions. In this respect it is said to be equal, if not superior, to the manoeuvre, since the greater perspective, and the distinctness of the whole arrangement, in the war-game, overbalances the advantage of the more drastic lessons taught by the results of mistakes or errors of judgment in actual manoeuvres. In the latter, moreover, the exercises necessarily are isolated and the movements of troops are executed only as far as the initial stage of an action, thus making an enormous claim on imagination, whereas in the war-game action is continuous and is carried through to the end, and again, since repetition is possible day after day, the essential points of procedure are acquired spontaneously and are apt to be more firmly impressed on memory.

The tract of land which is to serve as territory for the

exercises may be reproduced in the form of a drawing or relief. Of these, the drawing, usually on a scale of from 1:2500 to 1:5000, is the more popular one, owing chiefly to its cheapness. The relief, however, is much superior. Elevations and depressions being marked for the eye, a more clear and life-like picture of an action is created, attention is not diverted by minor details, and the whole course of the war-game is facilitated and accelerated. The cost of such a relief need not be excessive. A wooden base painted light green, rivers and lakes painted blue, woods and forests of coarse sand glued to the base and painted dark green, hills and other elevations of putty, and the whole cut up into four or eight sections, thus permitting a variety of combinations, make an inexpensive and acceptable working-model. Exact reproductions of a really existing territory or of fortresses and their surroundings require of course more careful workmanship and, owing to the large number of models necessary, make the relief much more costly than the simple use of charts.

The marks representing troops of different sizes and arms are pieces of sheet-zinc, variously colored, and must in form and dimensions reproduce reality as closely as possible. Troop-marks which are too massive or so high as to rise above the buildings on the relief act as disturbing factors. If rightly proportioned they are easily manipulated with the aid of a small magnet. In addition to the painted troop-marks, representing the various formations of bodies of infantry, cavalry, or artillery, it is advisable to have on hand a number of small, plain pieces of zinc to serve as marks for railroad-trains, ambulances, trenches, impediments, etc. All these marks, but especially the troop-marks representing different formations, should in their dimensions approximate the scale of the relief. Distances are measured with the aid of a compass.

The most important personage in the war-game is the director. The combination of qualities which he must embody is of such rare occurrence that the service-regulations of the army recommend the waiving of all distinctions of rank and length of service in his selection. Logically, of course, the commanding officer of a regiment should be the man best fitted for this position, but that is not always the case. In the first place, the director must be possessed of comprehensive knowledge and ample experience in the sphere of tactics and the history of military campaigns. Next, a lively imagination, of particular service in the plastic description of details, is required, which, on the other hand, he must

know how to curb by calm reflection. He furthermore needs a vivid, concise, and effective mode of presentation, a good memory, and, finally, a fair amount of didactic endowment should be his.

It is obvious that the course of the war-game will be beset by difficulties unless the commanders of the opposing forces and their subordinate officers have considerable tactical skill at their disposal, including a knowledge of the tactical fundamentals and the various formations of not only their own arm but of all three branches of the service, and, in addition, sufficient practice in the giving of orders for, and during, the development of an engagement. Proficiency in these accomplishments is best acquired in a brief preliminary series of exercises under a competent instructor. Suggestions concerning the nature of such exercises and the manner of conducting them may be found in two publications, (1) *Taktische Entwicklungsaufgaben für Kompagnie, Bataillon, Regiment und Brigade*, by R. von Briesen, (2) *Taktische Aufgaben für Kriegspiel, Übungsritt, Dispositionsübung und Selbststudium der Infanterie, in Anlage und Durchführung*, by Zöllner. Since experience teaches that from 15 to 20 is the most favorable number of participants in the war-game and the whole body of officers in a regiment of each of the three branches of the service exceeds this number considerably, the exercises also offer an opportunity for selecting the more clever ones and then gradually advancing the rest to the required standard of efficiency.

Concerning the size of the bodies of troops employed in the war-game the most promising procedure is to begin with smaller bodies of men, emphasizing intensive analysis, and later manipulate with divisions and whole regiments. Analogously, in the choice of problems the prevailing maxim should be from the simple to the complex. Valuable information with regard to these matters may be secured by the director of war-games from the study of relevant chapters in the following publications:

- (1) Balck,—*Taktik*.
- (2) Briesen,—*Taktische Entwicklungsaufgaben*.
- (3) Meckel,—*Grundriss der Taktik*.
- (4) Scherff,—*Sämtliche über Taktik erschienene Schriften*.
- (5) Schlichting,—*Taktische und strategische Grundsätze der Gegenwart*.

As model collections of tactical problems the following are recommended:

- (1) Gizycki,—*Strategisch-taktische Aufgaben nebst Lösungen*.
- (2) Häsele,—*Taktische Aufgaben und Besprechungen*.
- (3) Immanuel,—*Taktische Aufgaben*.

(4) Moltke,—*Taktische Aufgaben aus den Jahren, 1858-1882.*

(5) Zöllner,—*Taktische Aufgaben für Kriegspiel, etc.*

The director's first function is the presentation of a war situation and of the tasks of the playing parties which oppose each other. Situation and tasks combined are known for short as "supposition." Since in actual warfare small bodies of troops (the most advantageous units for the war-game to begin with), are rarely expected to solve independent problems, and since the first consideration in the choice of a supposition is that it represent natural conditions, suppositions taken from small warfare, such as the covering of requisitions, evacuations, etc., are usually at first selected. The supposition given, the opposing forces proceed with the solution of the problem and, in the opinion of some writers on the subject, this is best followed by a brief critical review of the whole game on part of the director. The essential factors which tend to make the game, even on a small scale, a success, are a probable and tactically correct supposition, exact and careful consideration and computation of all proceedings by the director, a strictly neutral attitude on his part, which figures mechanically with facts and situations as created by the initiative of the players, and a faculty to develop the whole in a manner so life-like as to cause the players to leave the game with the conviction that in reality things would have happened in just that way.

The claim of the advocates of small bodies of troops in the war-game is that consideration of details is facilitated, that the discussions are more exhaustive, and the game as a whole is more interesting and instructive. The disposal of the three arms and their co-operation, the relations and tactical formations of the single arms in an engagement, the utilization of the ground, in brief, all general doctrines of military science, may be illustrated, they hold, just as interestingly and instructively by the activities of a detachment consisting of one battalion, one squadron, and some pieces of ordnance, as by the manoeuvring with brigades and divisions, whereby details, which to the majority of officers are of the greatest import, are more or less excluded. More recent writers advance the view that the minor problems are left more profitably to active service in the field and that the war-game be reserved to those actions which afford opportunity for applying all the principles of modern warfare and acquainting officers with the elements of strategical science, thus introducing them into what constitutes the highest art of their calling. It is in accordance with this view chiefly that the war-game is played today.

The cartographic material for the war-game on a larger scale is as a rule obtained from publishing houses. Ready-made troop-marks are also for sale. These and a compass and longimeter constitute the necessary apparatus. The course of the game is the same as in the smaller exercises. It is divided into supposition, execution, and discussion and is played under the leadership of a competent director who also acts as referee whenever the services of such an official are required.

The choice of problems and the skill of the director in presenting the supposition and conducting the game are of the greatest moment. The former cannot be selected arbitrarily but must be calculated to fit into a pre-arranged programme. They should also be chosen with due consideration to the particular needs of the various troops and branches of the service. Thus, there should be included demonstrations of the operations and engagements of large bodies of cavalry, the behavior in modern warfare of extended lines of field-artillery, the peculiar conditions of attack and defence of fortified places and positions by foot-artillery and pioneers, the manner in which the crossing of rivers is accomplished, and of other technical work. Of equal importance for all arms is occasional illustration of modes of attack and defence, encounters, contests for a fortified position, outpost duty, replenishment of ammunition, sheltering troops, supplying them with provisions, and sanitary service under the most varying conditions.

The war-game is usually preceded by a brief orientation of the officers present as spectators. This is best accomplished with the aid of a sketch on a blackboard of the operative and tactical situation which forms the starting point for the opposing forces, and by a brief presentation of the problems involved in the game. Next, the actual players are called in. The director begins with picturing for the benefit of both parties the environment in which the game is to develop. He describes the ground under the effects of the influence of the season of the year, weather, illumination and temperature. He recalls to the mental eye the characteristics of summer, for instance, waving fields, shady orchards, mellow, green meadows, dusty highways, woods and forests in full foliage, over which stretches a blue and cloudless sky, or dark clouds presaging thunder-storms and rain; or he pictures late autumn with trees defoliated, fogs hovering above valleys and rivers, and naked heights in the rays of the sun; or perhaps the frosty landscape of winter which has covered the fields with snow and brooks and ponds with ice, and whose

clear and chilly atmosphere tends to relieve distinctly from the background everything that stirs and moves. He further gives information concerning the construction of villages, the practicable state of forests, the width and depth of streams, the nature and condition of their banks and the possibilities and means of crossing; he likewise speaks of the passableness of roads, in a word, of all those matters which are likely to exert an influence on the movement of troops, the effectiveness of arms, perspective, cover, etc.

After all necessary information of this sort has been imparted, one of the playing sides retires while the other is retained, the players being seated around the war-chart. A leader is appointed or elected and he presents to the director a report of the preliminary plans of his side in the preparation of which all his men have co-operated and which is to be made the basis of the game. This report is criticized by the director and eventual changes are made immediately. Next, the allotment of parts is in order, which may be done by either the director or the leader of the side. One officer takes charge of the cavalry operations, a second handles the artillery, a third guides the pioneers, while the remaining players of the side are most suitably reserved for the several bodies of infantry. Since, however, it is well known that the respective leaders of a side profit most from the game, a second officer may be similarly benefited by acting in the capacity of staff-officer or adjutant as counselor of the leader. The duties of this officer would correspond to those in actual warfare. He must ascertain in detail the position of his own army as well as that of the enemy and keep constantly posted in regard thereto; he must take charge of the order, report, and messenger service, call the leader's attention to necessary arrangements concerning the disposal of heavy baggage, trains, sanitary stations, ammunition supplies, and assist him in devising means and giving orders.

Preliminaries being concluded, the director starts the game by choosing a certain point of time up to which the side is supposed to have advanced in accordance to orders without anything of moment having occurred. If patrol engagements are to be avoided, it will usually be the time of arrival of a report which demands a change of previous arrangements or requires new orders. The situation at that particular time is now definitely fixed. The director, for instance, turns to the leader with the words: "The advanced guard under your command has fallen in according to orders at 6 A. M., an advanced guard of cavalry has started at 5.45 A. M. along

the road to the village N. with orders for the time being not to cross the brook P.; it has arrived in that vicinity, according to your computation, about 8 A. M.; personally you have put under marching orders your main body of troops and have then proceeded to its head. At 8 A. M. you have just arrived at the village Z.; with you are your adjutant, the division commander of the first division of the first field-artillery regiment and his adjutant, an orderly-officer and two trumpeters, and there are furthermore at your disposal four orderlies on horseback and two bicyclists. Before I acquaint you with the reports which have just arrived you will place in position on the chart the marching column of your advanced guard as you conceive it to be at 8 A. M." Having done so, the leader is given all messages and reports that are supposed to have arrived for him previous to the time selected as the starting point of the game.

It is needless to point out that the various messages, reports and other communications which, in the course of the game, are repeatedly transmitted by the director to the leaders should, in content as well as in form, resemble closely those of actual warfare. To give full, detailed and precise information would not be war-like. In actual warfare information usually is scant, indefinite, and often unreliable. It is the commander's business to sift the probable from the improbable, the true from the false, and to shape his course of action from his own deductions. Hence, it would not be correct for the director to say, for example: "The Western edge of Pournoy la Grasse has been occupied by two dismounted squadrons," or perhaps, "three batteries of the enemy have been mounted on the height North of the village X." In real warfare the size of an opposing force and the branch of the service to which it belongs as a rule cannot be immediately recognized, and the number of the pieces of artillery and their position remain uncertain until surmised from the frequency and the direction of the firing. Even concerning infantry exact information is not to be had at once. The size of a body has to be estimated from the length of the columns and the time they take to pass a given point, and that although modern facilities for observation are available. For a similar reason, having given all necessary information, the director should not ask: "What do you do now?" This form of question would tempt the leader to answer narrative fashion, invite drawn out discussions and delay the game. The correct way to ask is: "What are your orders?"

The course of the game will therefore be as follows: The

director imparts the necessary information. The leader gives his orders. The leader's subordinates give their orders on the basis of his.

The side then retires and the same process is gone through with the opposing side.

Since the war-game in a way resembles the game of chess, in which first one side moves and then the other side, "the length of the move," that is to say, the period of time which the game may progress without the other side being heard, is a matter to which the director has to give careful consideration. Too short moves delay the game and are apt to tax the patience of players and spectators. Too long moves involve the danger of having to retrace one's steps and to play over part of the game when, for instance, one of the two leaders rightly objects: "I would have known that already at such and such a time and consequently have given the following orders at the fork of the roads." Such objections are not easily ignored.

Briefly stated, the following is to be said concerning the length of the move: The further along the war situation has developed and the greater is the fleetness of troops in motion, the shorter should be the length of the move. This suggests at once that the cavalry war-game demands the shortest moves. On the whole, however, the length of the move will undergo frequent changes in the course of the game. Success depends on the director's good judgment, and that is acquired only by experience.

The discussion of the game at its close by the director assumes most profitably the form of a resumé. Aside from a general review of the question as to whether the solutions of the several tactical problems by the leaders were correct or not, criticism is best avoided. Generally speaking, discussion of topics as the following is in order:

(1) Was the conception of the situation at different points of the game a proper one, and were the subsequent moves appropriate?

(2) Were the orders clear and definite and correct in form?

(3) Did the subordinate leaders give suitable directions and were they justified by the situation?

(4) Were the conditions of the ground sufficiently appreciated?

(5) Was there effective co-operation of the various branches of the service?

(6) Did any serious violations of the regulations occur?

For the rest, what the service regulations say of the manoeuvre applies also to the war-game: The discussion should be of appropriate brevity, without tartness, and objectively instructive. It should never be confined to fault-finding and mere criticism but should always supplement disapproval with a statement of what, in the opinion of the director, would have been the proper mode of procedure.*

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* The psychological aspects of the game would form an interesting subject for study. It involves, obviously, the utilization and the bringing to a high degree of perfection of many of the so-called higher mental qualities but, above all, those of memory and of constructive imagination.

RECREATION AND REVERSION *

By G. STANLEY HALL

Our age, and I fear most of all my own country, suffers from ever-increasing nerve and brain strain and over-stimulation. Our very schoolboys are told that they may possibly become presidents or millionaires, that theirs is a land of boundless opportunity, while our steamship agencies lure a million immigrants to our shores annually by iridescent suggestions of easy wealth. Our mails are crowded with the attractive schemes of promoters of "get rich quick" schemes. Roosevelt's precept and example are summed up in the gospel of strenuosity. Work hard, think intensely, be a striver or climber and you will arrive, and "Nothing is too great to be attempted," is our slogan. Ours is a young man's land. Osler's jest that at forty every man should choose between chloroform and a Carnegie pension is often taken half seriously. It is hard to retire from business, and grow old with Ciceronian dignity, and while we know much of adolescence, the psychology of senescence is with us least understood practically or even theoretically. Specialization everywhere, which requires a man to spend his life, for instance, on one of the more than forty different processes involved in making a shirt or a shoe, not only makes Legge's "Thinking Hand" impossible, but condemns a workman to be always a fractional part of a man. Such popular catch words may serve to suggest our growing horror individually and collectively of inferiority, *Minderwertigkeit*. Now, too, we have the so-called "efficiency movement," a culmination in the field of industry of acute Americanitis, set forth in the gospel of greatest results by least effort by Taylor, Gilbreth, Emerson, Scott, Shadwell, Dresser, Marden, Davenport, Roester, Cadbury, Brisco, Goldmark, Schultze, and of course by Münsterberg, who writes equally well on every subject, also the Tuck School studies and many others.

These people analyze the processes, *e. g.*, of laying a brick,

* This paper is here printed without change, as it was prepared to be given in German at the IV. Internationaler Kongress für Volkserziehung und Volksbildung, in Leipzig, September 25th to 29th, 1914. At the outbreak of the war the congress, the program of which had been completed, was abandoned, and so the address was not given.

eliminate stooping, which involves lifting each time forty pounds of their weight through an average of twelve inches, by movable platforms, reduce the number of movements for each brick from seventeen to seven or even to five, and thus more than double the number laid per hour or day, and at least relatively diminish fatigue and increase the wage. By similar studies of the loading of pig iron onto cars, a workman who before normally loaded twelve and a half tons now loads forty-seven and a half tons per day with proper intervals of rest, lifting and carrying his burden in the right way, pace, and rate. Coal-heaving is analyzed, and the effort found to be most economical with an average shovelful of about twenty-one pounds. So, too, the size, weight, mode of use of common tools like the axe, scythe, saw, hoe, rake, and other modes of unskilled labor are analyzed. There are also new methods often carried into great detail in keeping accounts, with daily footings with a view to reducing the number of the some eleven thousand business failures per annum. Thus the effort is to find in every department a standard of day's work, a man-power. There are also standard types of business, municipal, school, and even university organization. Others would standardize cultural processes and methods, and yet others have proposed standard legislation on a great variety of subjects. Our students are exhorted to maximize their efforts, to study and think intensely, and James would have us all cultivate a higher and more dynamogenetic erethic second breath method of work. Time is money and only by toil with utter abandon can we rise above mediocrity and think and act our best.

Thus with us the struggle for social and even physical existence is ever harder. Competition compels us more and more to draw upon our reserve energies to succeed, and with every increasing year of age the over-stimulated hopes and ideals of childhood and youth have to be abandoned. Instead of the noble mansions youth had dreamed of building for his soul, the adult finds that he must accommodate himself to a cottage or a hut, and so *Angst* and worry gradually supervene and many succumb to neuroses or psychoses or take "flight from reality" in the sense of Freud, or feel their own incompleteness in the sense of Janet, or their *Minderwertigkeit* as Adler has characterized it. Thus industrial, social and physical causes combine to favor neurotic symptoms, for we Americans perhaps more than any others suffer from nerves, so that not merely the term neurasthenia but the disease is an American product. Certain psychopathologists are now telling us that the phobias, obsessions, delusions, imperative ideas,

and even reveries and dreams, are reversionary to childish states, or realizations of its repressed wishes, and that most diseases with nervous complications are reminiscent, not only of childhood, but of the phyletic stages of man's development and that just as exhaustion reduces immunity from morbid germs, which have always perhaps been man's chief foe, so loss of courage or sense of failure make him more vulnerable to all the agencies fatal to the individual or the stirp.

This preamble brings me to my thesis today which is that there is a normal form of reaction to the ever more urgent demands of modern life, a healthful type of flight from reality or the *devoir* present which has received too little theoretical or even therapeutic consideration, and that is found in recreation. But the point I wish especially to stress is that nearly all forms of it are reversionary in the sense that they involve falling back to activities that are older than modern civilization and appeal to lower strata or neuro-muscular response, and that they strengthen and refresh us by awakening processes and propensities long dormant, or, in other words, that sport, play and amusement are older than work and involve more generic activities of body and mind and thus are truly re-creative and re-generative.

To illustrate: one of the first movement types is striking with a stick, which was the first tool and did much to make man man. To swing the distal end of a stick swifter than the arm through a larger arc and thus with greater momentum to relieve the hand or fist from the pain of impact, and third, to hit with a harder, heavier, and perhaps sharper point than the hand or fist could do, gave an immense advantage which no animal ever attained. This helped man to become lord of creation. If not the Java man some probably earlier *pithecanthropus erectus* added to the advantage of being upright that of being the hitter whose blows were formidable to all animal and human foes, and this also gave him great power over inanimate nature. The far end of the club soon became armed or weighted and from it evolved the axe, hammer, and all tools, weapons, and implements that pound or beat, strike or hit, including not only the broadsword, but the whip, and with all these multifarious instruments with which the hand was armed there was also evolved a strong *praedeterminierende Tendenz* to use these on every occasion, fit and unfit. This *Trieb* is abundantly illustrated in children. Russell observed a boy of thirteen months who struck his tin plate at the table with a spoon fifty-seven times in a minute and a quarter, and many toys are used and broken in this way, while also many observers of children report this strong

propensity to use anything they can handle to strike with. So, too, for youth this makes a specific ingredient of the charm of baseball, cricket, polo, tennis, hockey, Lacrosse and many other games in which older men find recreation by reversion, and the fascination of the bat, mallet, putter, are due to the fact that they enable us to turn away for the nonce from the gruelling hard push-up against reality and to relapse or retreat from it and to resurrect ancient phyletic propensities. The stick principle has a general symbolic embodiment in the sceptre and the mace, while rhabdomancy is a reverberation of a man's pristine sense of this new source of power. So when primitive man first learned to throw by swinging a stone or other missile as rapidly and through the arc of as large a circle as his arm could describe, and then letting it go at the point of most rapid motion, this first material form of action at a distance marked another step in man's dominion over nature, and from it evolved all the arts of the boomerang, spear, sling, and then in due time came the bow, of the early use of which modern archery is reminiscent, and the arrow, and the elaborate ritual and folklore with which every stage of its manufacture and use is spun about, and then the advent of gunpowder and the science of ballistics. All studies of children that have given attention to this subject show that many boys pass through a stage in which throwing is a passion which even their respect for property and persons is unable to control, and they must throw at anything and anyone in sight. This ancient impulse has been an important constituent or interest generator in many games and sports, particularly in the manifold uses of the ball, or quoits, putting shot and hammer, billiards, in knife and boomerang throwing, and also again in polo, tennis, cricket and the rest. Modern football is perhaps the most primitive and may become the most savage of all modern games, particularly in the scrimmage or melee. It has been defined as a prize fight multiplied by eleven. The spectators, too, relapse and perhaps yell and dance like aborigines. The issue of the game is of little import and has no relation to the life of the spectators, but the emotion is intense and suggests gladiatorial combats in the arena. Habitues on the bleachers often say that the charm of the game is that it is bloody and that it makes other games seem tame in comparison.¹

¹ I have been most of all indebted to Professor G. T. W. Patrick, who seems to me to have the best and clearest conception of anyone I know of the nature of play. See his *The Psychology of Football. Am. Jour. of Psy.*, July, 1903, Vol. 14, pp. 368-81. *The Psychology of Play. Ped. Sem.*, 1914, Vol. 21, pp. 469-84. *The Psychology of Relaxation. Pop. Sci. Mo.*, 1914, Vol. 84, pp. 590-604.

The principle of the string, although its perishable nature has left us few traces of it, must have been another and very early discovery of prime import. From rushes and tendrils on up through flax, wool, cotton, the art of spinning, weaving, knitting, braiding twine, rope, chains, knots, loops, even string languages like the Peruvian quippu, stringed instruments, wire, etc.—all these were sprung from the first tie that binds units to unity, and Acher² has gathered copious illustrations of the string passion in children and shows how extensively it enters into their plays, games, and toys.³

Again, primitive man fished for food or profit like fishermen now, but modern man does so for sport. One pleasant summer holiday a New York newspaper sent out its reporters to estimate the number of boys and men who were fishing off the docks that completely surround that city, and the census showed some twenty-four thousand thus engaged. About three-quarters of them were out for fun and not for fish, for they often threw back their catch or gave it away, but they were lured to this occupation by the call of the wild or of the hereditary instinct in their neurones, and went home at night rested and refreshed by the recrudescence of an old racial habit. To feel the throb and thrill of a nibble on the hook, to see the float drawn down under, or to pull up even a minnow from its element, and especially to play with a good sized gamy fish that fights well and at last to land him, owes its fascination in no small part to the fact that formerly in the history of the race the satisfaction of the cravings of appetite was thus anticipated. Now the fisherman may sit for long hours without a bite and go home refreshed and rested because he has revived and felt, unconsciously though it be, a fragment of the ancestral life of the race. A New York psychopathologist often prescribes fishing for his overwrought business professional patients and we are told with good results.

In a study of dolls among the various ages and races of men, Ellis and I⁴ found that only a minority of them represent babies, while more are figurines of adults reduced to fit the dimensions of the child mind and that in many primitive races dolls are often idols representing gods and heroes, so

² R. A. Acher: *Am. Jr. of Psych.*, Jan., 1910. Spontaneous Constructions and Primitive Activities of Children Analogous to Those of Primitive Man.

³ K. Haddon: *Cats' Cradles from Many Lands*. New York, 1911, p. 95. L. Gulick: Interest in Relation to Muscular Exercise. *Am. Physical Educational Review*, June, 1912.

⁴ A. C. Ellis and G. S. Hall: A Study of Dolls. *Ped. Sem.*, 1896, Vol. 4, pp. 127-75.

that the charm they have for childhood is complex and is yet not entirely understood. The surprise in this study was to find that children's interest was so often fanned consciously and unconsciously by that of adults, and that so many women, young and old, conserve and play with dolls very secretly and alone perhaps through all their lives. We have already a small, but interesting anthology of cases where doll play has been prescribed for neurotic and psychotic female patients with apparently good results.

In all active competitive sports, horse and boat racing, foot and base ball, and the rest, the tension of all spectators is very great, for man has always had to struggle with his fellow men for survival, for booty, and for women, and perhaps from the latter's greater interest in the issue man has inherited some of his zest for looking upon conflicts. The best man must win and the acclaim always awaits the victor, while the vanquished is a negligible object liable even to insult and injury. In such modern contests the main issues that hang upon the wager of battle are of very slight significance and our zest in it now is because of old the prize was not formal or trivial, but most vital issues were at stake. Thus there has been a *Verschiebung* of the ends to the means; indeed every drama and romance pivots on a conflict ending in the triumph of one and the defeat of the other force or person, and the zest of it all is that the conflict is more intense and the issues are more clearly drawn and palpable than in real life about us. Here all ends well, and we are refreshed because the primal emotions of our forbears in us have been relieved for a time from every impression and allowed to irrigate our entire psychophysis nature.

In many American and English schools boys fight each other and each knows who can whip him and whom he can whip. Prohibition and even Parliament cannot stop it, and it is often considered by the authorities as making boys mettlesome. In witnessing great pugilistic contests, which I sometimes permit myself to do as a student of human nature, the three surprises are, first, my own tense and absorbing interest that makes me want to shout and yell like a wild Indian as the rest do and perhaps leap into the ring; second, a kind of cathartic refreshment after the brain-storm, which like a thunder-storm clears the air; and third, that I see so many other respectable people there whom I know, but who do not wish me to recognize them. Estimates of the number of those present at the Circus Maximus in ancient Rome to witness the encounter between man and man, or men and animals, vary from two hundred thousand to four hundred

and eighty-five thousand. So in bull fights, wrestling matches, Marathon and all other races, and all the countless contests for championship and every kind of competition to see who is the better man and boy, the Jesuit appeal in the schools to emulation and rivalry, the strange stimulus of having a racer or speeder in practicing for running or bicycling, prizes, even in the medieval wager of battle and in modern war we have the same excelsior passion to overcome, the stimulus of which makes the nerves tingle and brings calentures to the blood. Why? Universal peace, harmony, and accord would make this a dull and stagnant world. Man has always been a fighter and his passion to kill animals which our game laws try to protect, and inferior races, as illustrated in the complete extinction of the Boethucks and Tasmanians, etc., is the same thing which perhaps in the dark past so effectively destroyed the missing link between the great fossil apes of the tertiary and the lowest men of the Neanderthal type. All these illustrate an instinct which we cannot eradicate or suppress, but can best only hope to sublimate.

Again, speed is perhaps another genetic category on which once safety from pursuit and capture, and also the power to overtake enemies depended. Speed is no longer necessary for survival, but in scores of plays and games success depends on superiority in running, leaping, dodging, while fast riding or sailing and the speed mania of autoists, driving, motoring, flying, all show that it has now a charm as an end in itself and not a means. How shall we explain the exquisite exhilaration of being swiftly borne through space, along roads, in trams, on the aeroplanes? This *Trieb* may be complicated with the instability of our shifting population, shown in the rapid rise of the curve of movings in the spring, which almost suggest seasonal migration, illustrated in an extreme case of a girl of thirteen in St. Louis whose parents had moved eleven times, so that she had attended as many different schools since she entered six years before.⁵

I have no time to speak of tops, kites, marbles, finger-, guessing-, circle-, counting-out-games, tag, gangs, and other spontaneous social organizations often very elaborate (Philadelphia having ninety-three rather lawless organizations of boys with some features of savage tribes), jumping the rope, forfeits, the jack knife and whittling, bowling, knuckle bones, and the other seven hundred other plays collected and described by Mr. Johnson;⁶ nor to discuss toys, nor describe the

⁵ Luther H. Gulick: *Physical Education by Muscular Exercise*. Phila., 1904, 72 pp.

⁶ G. E. Johnson: *Education by Plays and Games*. *Ped. Sem.*, Oct., 1894.

recent strange revival of Morris dances in England, the uses of masks, and the passion of impersonating other people and animals, the children's theatre, story telling, the perennial charm of the country, the forest, the shore, tenting, scouting, and the many games of chance, and with cards which were once used for divination, and the gambling instinct, and now the moving picture seen by millions daily, 95% of which are censored and the culture possibilities of which almost rival the invention of printing.⁷ When we analyze all these into their elements we find that they hark back to primitive or pre-historic life. Chicago spent eleven million dollars on playgrounds and their accessories in two years, and New York City up to 1908 spent fifteen million, and there are now twenty-four thousand supervised playgrounds in the United States employing 16,318 professional leaders and supervisors. Many places have prohibited the use of certain streets and they are set apart for play. Juvenile court records show the helpful results, and one enthusiast at a meeting of teachers said with applause, "Better playgrounds with story telling and folk dances without schools, than schools without playgrounds." The fact that in a land where work is so hard and business so exacting amusements and pastimes have had this sudden and amazing development, presents a challenging problem. Although we have countless studies of special plays, games, and toys, and much speculation, we have as yet no satisfactory psychological theory of what play means and what it does, and my own modest contribution here consists merely in the suggestion that if ever we have one, it will regard play as for the most part regressive.

Sleep is, in a sense, a relapse to an infantile state, and is not without certain analogies to foetal life, and dreams sometimes realize childish wishes abandoned in the waking state. Laughing and crying are autistic and low level functions expressive of pleasure and pain, while reverie and day-dreams are quasi relapses to mythopoeic stages of mentation. Even religion is resignation to a higher power interpreted, because of the objective habit of consciousness, as outside of us. It means trust and dependence. We let go and are sustained, and we cease to strive, or desire to yield to a potency not ourselves. We retreat from the intellect, which is a racially new, and individual achievement, to feeling and emotion, which are racial and older. Many nervous and cerebral diseases, and even old age itself, are essentially recessional and the fluctuations of feeling well or ill, euphorious or disphorious.

⁷ The Standards of the National Board of Censorship of Motion Pictures. May, 1914.

do much to determine whether we are alert, keen, and intent on the world's work, or turn our backs upon it for the nonce. Thus our life is on a genetic plane, the top symbolizing the gospel of strenuosity focusing in the efficient man with action, attention, volition, and the maximum of effort, while the bottom stands for automatic, spontaneous, reversionary states and acts, from play and recreation down to passive relaxation and even waking or sleeping dreams. Not only individuals, but races and nations, show rhythms of progress alternating with stagnation and even regression, mental and moral, and at the extreme are crazes, now for amusement, and now for the most energetic work.

Why is recreation re-creative? It is because the *Verdrängung* of life intermits. From the genetic point of view, growth from childhood to maturity means habituation, limitation, specialization, and the child is not only ages older, but more generic than the adult. It, like woman, is a better representative of the race than the adult male. Development is in certain directions along definite *Leitlinien* only, and on other's potentialities the Wordsworthian shades of the prison house close in. The child's life is more feeling and less intellect, and feeling is more generic and less individual. The forms of industry change and grow more special, but the cardinal forms of play and toys, the rattle, doll, ball, the club, tag, games of chance, are the same now as in antiquity for savage as well as civilized children. Froebel said, "Man or child is whole only when he plays." In play we revive and rehearse old types of industry, unleashing primitive emotions, activate phyletic thought forms, fall back on older, better organized, and saner strata of psychophysics impulsion, and reanimate and reeducate ourselves, and revive old proclivities, which suggests revisiting man's lost paradise, assuming an old, happy *Stellungnahme* to the world. Play is thus a liberal humanistic culture. It repeats in an adumbrated way the activities of the phylum. In it we are no longer intent upon the end, and there are no issues of life or death at stake, but the joy is in the activity itself, and the prize is fictive or trivial. Of old, many plays and games were sacred to the dead, and all might be so to the cloud of witnesses from far back in man's evolutionary history. For one fatigued by the hard push-up against reality, which labor requires, and who has to retreat from it, it is fortunate if he can do so in this healthful way of play, and not worry and grow neurotic, for it must be one of the two. Thus play is a refuge, a hygienic resource, a release. It means rejuvenation, even from old age. It is a safeguard against psychoses by an Antaeus-like

touch of the individual with his phyletic background. Play does prepare for life, but this function of it is secondary and incidental. It does so by putting the individual in possession of the rich potentialities of his heredity, which would otherwise slumber or decay in him, and in this function lies the partial truth of Spencer's theory of spontaneous activity, for we do have an immeasurable source of impulsion in us upon which to draw. Thus play does far more than to vent or drain, and the catharsis theory is inadequate because play also increases energy.

We are a nation of hard workers, and business, too, has become almost an obsession. But now vacations lengthen, holidays increase, the hours that constitute a day's work are more and more restricted by law, employees take little interest in their work, and loaf, shirk, and "sojer." Once we had a strong Puritan rancor against amusement, if not against happiness itself. Our parents stayed at home and kept busy. Now we have become great travelers, making constant outings, excursions and tours, incessantly visiting expositions, fairs, spectacles; and statistics show that we are per capita the greatest theatre goers, game and sport fans and rooters in the world. In our recreation we are prone to seek, not the highest, but to fall to a rather low culture level of mere amusement and diversion, and comedy or roaring farces are far more popular than tragedy or society and problem dramas. We want relaxation and escape from the ever more gruelling day's work, and are alternating from the hard to the easy life. We hope that all these rest cures will bring us regeneration and not degeneration. Our problem is, how can a nation suffering so acutely from over-work that the older families, save in the South, are rapidly dwindling toward extinction, recuperate itself and become again ascendant and fecund? We have a pragmatic, if not even conscious belief that by going back and restoring in ourselves all possible elements of racial childishness, and rehearsing its joys and sorrows, its activities of body and states of mind, we are really resting the higher cerebral centers of the neo-palium and backsliding to paleo-atavistic functions by recurrent oscillations up and down the phyletic ladder of psychogenesis. Even our academic student life, as Sheldon has shown, abounds in abject banalities and licensed sillinesses, as if by an instinct to keep the way open back to infantilism and its wellsprings of life, or as if to compensate, individually and racially, for the fact that we tend as no other nation ever did, to lose sympathetic touch with childhood, and also to compensate for the fact that our history is brief by reverting to and restoring in our own lives

the early and lost stages of man's evolution. Little as we understand all this scientifically, may it not, at least in some sense, serve to explain why a nation that combines so many of the best of the aggressive traits of mankind and has contributed so much to racial progress on the practical side, also combines with all these advanced traits so many that are very primitive and reversionary, and which ought to be recessive? In early days we learned only too well the lesson of incessant and severe toil. Now we are learning how to play, and because this is new and we so need the restoration it brings, we overdo it. Some of our recreation halls and centers are inscribed with the motto, "He works best who plays best," and perhaps the evolutionary interpretation of this motto which we have suggested gives it a far deeper theoretical and practical significance than we yet realize.

AN INTERESTING SEX DIFFERENCE¹

By EDWARD K. STRONG, Jr., George Peabody College for Teachers

Differences in the mental life of the two sexes have always constituted an interesting topic for discussion. Very much has been said on the subject. The general conclusion of nearly all writers in the past and almost all even to-day, has been that there were very great mental differences which must be apparent to all. But when these supposedly striking differences in mental attributes have been subjected to careful experimental study, the one surprising result has been that there is no particular difference discernable between the two sexes.

I cannot recall an experimental study which has given evidence of any really significant difference in any mental function between men and women.² The differences which have been found have been but slight ones—such as a greater ability in most kinds of memorizing for women and a greater ability in many kinds of reasoning for men. But after all, these differences have been but a few per cent of the total scores.

In my study of the relative merit of advertisements in 1911, the interesting fact came out that women were very much more easily aroused emotionally while looking over a set of advertisements than were men. In one experiment the subjects were required to arrange some soap advertisements in an order of merit according as the advertisements made them want to buy the soap. Having done this, they were questioned concerning their attitude towards the advertisements,—the questioning being directed toward finding which, if any, of the advertisements had no appeal for them. If there was any, it meant that the advertisements placed above these "zero" advertisements were increasingly more persuasive and the advertisements placed below them were increasingly more distasteful. The results show that the average man placed no advertisement below this point of indifference while the

¹ Read before the Conference on Individual Differences in celebration of Professor James McKeen Cattell's twenty-fifth anniversary as Professor of Psychology at Columbia University, April, 1914.

² An unpublished study by H. A. Ruger shows a quite clear difference between the two sexes with respect to solving mechanical puzzles.

average woman placed 13 of the 50 advertisements below it. I was content at that time to explain my findings by simply stating that the results show that "women have more and greater dislikes than men and are surer of them."³

This striking difference in attitude toward advertisements has appeared again and again in my work. A peculiar phase of it has been that although women know instantly that they don't like an advertisement yet very seldom can they give a reason for their dislike. They are certain of it, but they don't know why. This was strikingly illustrated with a series of five General Electric Tungsten Lamp advertisements.⁴ Toward one of these advertisements I obtained from many women a decidedly antagonistic attitude; but not a single man showed any such feeling. Finally, after a great deal of questioning it appeared that probably the dislike was due to the drawing of the child held in a mother's arms. The forehead and short curly hair suggested to some a negro child. The illustration to the advertisement, then, was not appropriate, presenting, as it did, a white woman holding a negro child in her arms. I can not be sure that this was the cause of the antagonistic attitude of all the women toward the advertisement. It seems as though it was the cause in several cases, and possibly was the cause in the remainder. In no case, as far as I know, did the woman realize this inappropriateness at the moment of expressing dislike for the advertisement. Only after some time did this incongruity come to mind. And when it did come to mind it neither added to nor detracted from the then present attitude of dislike for the whole advertisement, at least, as far as I could determine.

This experience, coupled with others of a like nature, suggested that women were often markedly influenced by details which were not consciously considered at the moment. Possibly, then, women saw in a situation more details than did men, and so realized a lack of harmony more often than did men, because they were influenced by the greater interplay of one detail with another.

Further light on this interesting point has come as a by-product from an experiment which was run for an entirely different object. And because it is a by-product the results are all the more significant in that not even the experimenter had the least glimmering of the facts until after the data had been computed.

³ E. K. Strong, Jr.: *The Relative Merit of Advertisements*, 1911, p. 79.

⁴ E. K. Strong, Jr.: *Psychological Methods as Applied to Advertising*, *Jour. of Educ. Psychol.*, Sept. 1913, 393-404.

In this experiment 25 full-page advertisements from the October, 1911, issue of *Everybody's Magazine* were shown one after the other to the subjects. The subject was then supplied with a pile of sheets of paper, on each of which appeared a piece of an advertisement. The test consisted in seeing to what extent the subject could correctly pick out the various details that had been present in the 25 advertisements. There were 291 such portions of an advertisement—133 being portions of the original 25 advertisements and 158 being portions of 25 other new advertisements. As the subject came to each sheet he assigned it to one of four piles—the first pile represented 100% confidence that this piece had been seen among the 25 original advertisements; the second pile represented 75% confidence—*i. e.*, reasonable certainty, but not such certainty as that to which one would be willing to swear; the third pile represented 25% certainty—*i. e.*, a feeling that possibly it had been seen, but with no great confidence in the decision; and the fourth pile received the remainder—*i. e.*, those pieces the subject was sure he had not seen, together with those he didn't know anything about. The pile represented a lack of any feeling of familiarity toward the piece.

Two different methods of presenting the advertisements were used. With the first method the 25 advertisements were shown at the rate of one per second. With the second method the 25 advertisements were given into the hands of the subject and he was instructed to look them through at his own leisure.

Forty individuals were tested by each method,—twenty men and twenty women. The forty women were entirely composed of students in psychology in Barnard College or in the Summer School of 1912. The forty men were likewise interested in psychology but they ranged from college students, through graduate students, instructors, etc., up to full professors. The age of the women on the whole was less than that of the men and the variability of age for the women would be considerably less than that of the men.

Turning now to the results, we see in Table I that the women did markedly better in both tests than did the men. In the test where the advertisements had been shown at the rate of one per second the men remembered 13.8% of the pieces, while the women remembered 20.8% of the pieces. The women did then 51% better than the men. When the variabilities of the two groups are considered it is apparent that the chances are 993 to 7 that this is a true sex difference. In the second test where the advertisements were looked

through at the leisure of the subjects, the men remembered 27.1%, while the women remembered 41.3%. The women did here 53% better. The chances here are 998 to 2 that this is a true sex difference.

Evidently then, when the two sexes are allowed exactly the same time to look at a set of advertisements or when they are allowed to look at the advertisements in their own way, the women do actually see 50% more details than do the men.⁵

But an objection may be raised to these results on the ground that these particular 25 advertisements were of commodities much more interesting to women than to men and so would naturally contain more details which would be noticed and remembered by them. The facts, however, do not support this contention. Six of the advertisements were of commodities used only by men, seven were of commodities used only by women, while twelve were of commodities used by both. Of the twelve, three were primarily for men and one for women. The commodities were then about as equally divided between those appealing to men and women as it would be possible to obtain.

Still more conclusive evidence we have from an experiment with these advertisements in which forty other men and women were tested. Here the advertisements were shown at the rate of one per second and the subjects were tested as to their ability to recognize the 25 advertisements from a pile containing the 25 and 25 other new advertisements.

Table II shows that the men recognized 74.8% and the women 74.3%. Here the men have done less than 1% better than the women.

Still another experiment shows that not only were these particular 25 advertisements not more interesting to women than to men but that in daily practice women are not interested in advertisements in such a magazine as *Everybody's* to anywhere near the extent that men are. In 1911 and 1912 some 300 odd men and women were supplied with copies of this issue of *Everybody's* and were requested to read Professor W. D. Scott's article on "Habit" which appeared in it. In every case the individuals were given the magazine by someone else than myself and none of them suspected that the advertisements in the magazine were of any interest to them. After having had the magazine in their possession one week and having read at least this article, 137 women and 80

⁵ This difference is truly one between men and women as we find them today. To what extent it is due to their inherent capacities and to what extent it is due to their differences in training is unknown, of course.

men were tested as to the advertisements which appeared in the magazine. Table III shows that the average man remembered 9.4% of the 77 full-page advertisements in the magazine while the women remembered but 4.1%. The ratio here is 100 to 44 in favor of the men. If we consider the results from the 25 advertisements which were used in the previous experiments we find that the average man remembered 11.2% of them, while the average woman remembered but 5.4% of them. The ratio here is 100 to 48. (The reason why these 25 advertisements were better remembered than the other 52 among the entire 77 is due to the fact that they occupied all the preferred positions in the magazine.)

Now what do our several experiments show? They indicate, first of all, very clearly that the 25 advertisements under consideration are noticed in daily life only about half as often or half as well by women as by men. Second, when men and women are afforded identically the same opportunity to notice these advertisements they can later recognize the advertisements equally well. And third, when men and women are afforded equally the same opportunity to look at these advertisements the women can later correctly identify 50% more details as having been in the advertisements than can men. And this fact holds true regardless of whether the individuals see the advertisements for the same length of time, or see each advertisement as long as they wish. Women, undoubtedly, then, are conscious of more details in advertisements than are men.

Accepting this fact as proved, what are some of the implications? It has occurred to the writer that possibly some of the differences between men and women in memory work may be due to this superior ability of women to note more details in the objects of study. For example, if while learning a series of nonsense syllables a woman can not only pay attention to the syllable as a whole, in the same way that a man does, but can also pay a little more attention to the letters making up the syllable, this additional information could easily explain the slight superiority women show in such work. And on the other hand, in tests of reasoning we might explain woman's slight inferiority as due to her being bothered to a greater extent with details which are not germane to the work in hand.

Whether there is anything in such a speculation or not remains to be proved. But it is not at all improbable that such might be the case. The present attitude of investigators concerning good and bad spellers is one in which good spellers are thought of as being attentive to more details in the words

than bad spellers. If the grasping of more details distinguishes the good speller from the poor one, why not extend the conception to memory work in general?

As the emphasis in this series of papers is upon individual differences rather than group differences, I have added some data from these tests concerning individual differences. Tables I and II present the figures. The range of performance is large, but neither sex can be said to have a greater range than the other for all the three tests. Cattell and most of his students have found that individual ability within a tested group varies as about 2:1. This holds true here with regard to recognition of whole advertisements but is not at all true with regard to recognition of details of advertisements. The ratios in the test where the advertisements were shown at the rate of 1 per second are in round figures:—

Men.	9	to 1
Women.	7½	to 1
Total.	14½	to 1

And when the advertisements were seen at the subject's leisure the ratios are:—

Men.	14	to 1
Women.	3½	to 1
Total.	15	to 1

The extremely high variabilities when both men and women are considered together can, of course, be explained as due to two overlapping distributions, as is the case. But the variabilities of the men under both methods of presenting the advertisements is very great and of the women also, in the case where the advertisements were shown at the rate of 1 per second.

TABLE I

- Showing (1) The per cent of *details* of advertisements which can be recognized immediately after seeing the advertisements.
 (2) The range of individual records.
 (3) The range expressed in terms of the probable error of the distribution.

	Advertisements shown at rate of 1 per second			Advertisements shown at leisure of subject		
	20 men	20 women	Total	20 men	20 women	Total
Average per cent recognized.	13.8%	20.8%	17.3%	27.1%	41.3%	34.2%
Probable error of average. . .	0.9	1.7	1.0	2.4	2.4	1.9
Ratio.....	100	151		100	153	
Range, best record.....	26.5	42.6	42.6	56.7	62.1	62.1
poorest record.....	2.9	5.6	2.9	4.1	17.9	4.1
total range.....	23.6	37.0	39.7	52.6	44.2	58.0
ratio, best to poorest.	9.1:1	7.6:1	14.7:1	13.8:1	3.5:1	15.1:1
Range expressed in terms of the P. E. of the distribu- tion, i.e.,						
greatest plus deviation .	+1.4	+3.9	6.5 +3.9	+1.9	+2.3	12.0 +2.3
greatest minus deviation	-2.2	-1.8	-2.2	-2.5	-1.4	-2.5
total range.....	3.6	5.7	6.1	4.4	3.7	4.8

TABLE II

Showing (1) The per cent of *entire* advertisements which can be recognized immediately after seeing the advertisements
 (2) The range of individual records.
 (3) The range expressed in terms of the probable error of the distribution.

	Advertisements shown at rate of 1 per second		
	20 men	20 women	Total
Average per cent recognized.....	74.8%	74.3%	74.6%
Probable error of average.....	3.0	2.2	1.8
Ratio.....	100	99	
Range, best record.....	100.0%	96.0%	100.0%
poorest record.....	54.0%	40.4%	40.4%
total range.....	46.0%	55.6%	59.6%
ratio, best to poorest.....	1.9:1	2.4:1	2.5:1
Range, expressed in terms of the P. E. of the distribution, i.e., 11.1			
greatest plus deviation.....	+2.3	+1.9	+2.3
greatest minus deviation.....	-1.9	-3.1	-3.1
total range.....	4.2	4.0	5.4

TABLE III

Showing the per cent of advertisements that can be recognized when they are displayed in *Everybody's Magazine*, after the subject has read at least one article in the magazine and has had it in his possession one week, but has never thought of being tested.

	All the 77 full-page advertisements being considered		Only the 25 advertisements being considered	
	80 men	137 women	80 men	137 women
Average per cent recognized ..	9.4%	4.1%	11.2%	5.4%
Ratio.....	100	44	100	48

THE MENTAL HYGIENE OF EXCEPTIONAL CHILDREN

LEWIS M. TERMAN, Stanford University

The purpose of this article is to present some data on the relation of school success to intelligence, and more particularly to raise the question whether the treatment of exceptionally intelligent and exceptionally dull children in the grades has proper regard for the actual mental capacity of such children.

The data to be presented are some by-products of a study of the school success of 1,000 non-selected school children who were tested in 1914-1915 by the Stanford revision of the Binet-Simon measuring scale of intelligence.¹ Those tested comprised all the children of all ages within two months of a birthday who were enrolled in the schools where the tests were made, and the subjects were therefore as nearly representative of the different ages as it was possible to secure. They included approximately one-third of the children enrolled, and we have no reason to suppose that if the other 2,000 not within two months of a birthday had been tested the facts for them would have differed materially from those we have found.

The mental age of each child was computed according to the Stanford revision of the Binet scale and comparisons were made between intelligence quotient and school success as indicated by three criteria: (1) The quality of the school work as judged by the teacher on a scale of five ("very inferior," "inferior," "average," "superior," and "very superior"); (2) Grade progress; and (3) The teachers' estimates of the children's intelligence. Intelligence, like school success, was also estimated on a scale of five. The present discussion will deal chiefly with the correlation between intelligence quotient and grade progress.

We have made this comparison for the entire number of children, but since there is little opportunity for children below 8 years to become retarded we have included in the following table only those with a mental age of 8 years or more.

¹ The Stanford Revision, with analysis of data from 1,000 cases, will be published as a joint monograph by Terman, Ordahl, Lyman, Galbreath and Talbert.

Grade II is regarded normal for mental age 8, grade III for mental age 9, etc. The 8 year mental age group includes all mental ages from 7 years 7 months to 8 years 6 months, and so on.

TABLE I
SHOWING GRADE DISTRIBUTION OF 676 CHILDREN BY MENTAL AGE

	GRADE										Total
	I	II	III	IV	V	VI	VII	VIII	H.S. I	H.S. II	
MENTAL AGE	8	25 25.5%	55 56.6%	18 18.4%							98
	9	4 4%	24 24.5%	48 49%	19 19.4%	1 1%	1 1%	1 1%			98
	10		4 3.8%	30 28.5%	49 46.6%	15 14.2%	6 5.7%	1 .9%			105
	11			6 7%	20 23%	38 44.6%	17 20%	3 3.5%	1 1.2%		85
	12			1 1%	8 8.3%	19 19.8%	40 41.1%	16 16.6%	12 12.5%		96
	13				2 2.6%	7 9%	29 37.5%	19 24.3%	21 27%		78
	14			1 1.5%		4 6%	21 31%	16 23.5%	26 38.2%		68
	15						5 14%	10 28%	21 58.5%		36
	16						2 16.7%	1 8.3%	9 75%		12
											676

The above table shows that nine-year intelligence is found all the way from grade I to grade VII, inclusive; ten-year intelligence from grade II to grade VII, etc. Twelve-year intelligence, which here ranges from grade III to grade VIII, would doubtless have been found in high school also if tests had been made there in any considerable number.

Table II shows the number and per cent who, according to mental age, are retarded or accelerated in school, 1, 2, 3 or 4 years. The table includes only the mental ages 8 to 16 inclusive.

TABLE II

SHOWING AMOUNT OF ACCELERATION AND RETARDATION IN THE GRADES
USING MENTAL AGE AS THE BASIS

	Grade below mental age				Normal grade for mental age	Grade above mental age				Total
	4 yrs. or more	3 yrs.	2 yrs.	1 yr.		1 yr.	2 yrs.	3 yrs.	4 yrs.	
Number	4	13	69	184	275	106	22	3	1	676
Per cent	.52%	1.9%	10.2%	27.2%	40.6%	15.6%	3.2%	.44%	.16%	

It may be pointed out that, after the age of 7 or 8 years, misplacement by one grade is not especially significant, as that could easily happen from any one of a number of causes such as early or late entrance, illness, a little more or a little less than average industry, etc. But in 112 cases, or nearly 16% of all, there is a misplacement of two grades or more, Eighty-five of these, or over 12½% of all, are cases of grade retardation below mental age; and 26, or nearly 4% of all, represent grade acceleration beyond mental age. It is interesting to note that school retardation of two years or more (reckoned on the mental age basis) is about three times as common as acceleration of two years or more. On the basis of chronological age the proportion of grade acceleration to grade retardation is even less than this.

Our present task, however, is to find an explanation of the rather surprising disagreement between grade progress and mental age. Taking up first the 26 children whose grade status is two or more years ahead of their mental age we find that 19 of these are by chronological age over-age for their grade. Ten of the 19 are chronologically from two to four years over-age. *In other words, those who are accelerated in school on the basis of mental age are usually retarded on the basis of chronological age.* The explanation is obvious. The school tends to promote children by age rather than ability, and although the very dull are allowed to become somewhat retarded, this retardation is ordinarily less than would be warranted by their actual mental development. For

example, there are six children of mental age 10 in the sixth grade. Two of these are 14 years of age, chronologically, two are 15, and one is 16. Of the two children of mental age 11 in the eighth grade, one is 17 years old, three are 16, and five are 15. Only two are normal age for the grade.

Turning now to the 85 children who are *retarded* two or more grades below the norm for their *mental age*, we find that 23% are by chronological age actually accelerated, and that over half of the remainder are in the grade where they belong by chronological age. Only 8% of those who are retarded two years or more according to mental age are retarded as much as two years by chronological age. This again confirms the suspicion that promotion is largely governed by chronological age and helps to explain why children of any given mental age are distributed over such a wide range of grades. There are of course other factors which sometimes cause children to be enrolled in grades too low for their mental age. Among these are irregularity of attendance, illness, and lack of industry.

Comparison of grade status by mental age and chronological age reveals the striking fact that, on the whole, the grade location of school children does not fit their mental age much better than it fits their chronological age. Except in the upper years, children of a given mental age are scattered over nearly as wide a range of grades as children of that chronological age. Plainly the efforts made at school grading fail to give groups of children of homogeneous mental ability.

That this is largely due to the incorrect grading of children of inferior and superior intelligence is easily shown by taking those whose intelligence quotient is practically normal, say between 96 and 105, and finding how these distribute themselves in the grades. This method gives the correlation relatively freed from the constant tendency of teachers to over-promote the dull and under-promote the superior children. Of our 227 children with an intelligence quotient between 96 and 105 only 4 who are below the age of 14 are more than one grade removed from the place where they belong by chronological age. All the two-grade displacements are in the direction of retardation. That is, the child with an I Q between 96-105 is never found (in our data) two grades advanced in school; and the chances are about 50 to 1 that if he is under 14 years of age and tests between 96-105 he will not be as much as two years retarded.

Another interesting comparison may be made by taking the

extreme I Q's and finding the location in the grades for the exceptionally dull and exceptionally bright children of each chronological age. We have done this for the I Q's above 120 and below 80. We will consider first those with an I Q of 120 or above, and by way of information it may be stated that the child who tests at 120 or above belongs with the best 5 children out of 100 selected at random. Of 54 such children, 7 years old or above, 15 are in the grade where they belong by chronological age, and 3 are even retarded one year by chronological age. *That is, 18, or one-third of all those having an I Q of 120 or above, fail to reap any advantage (as far as promotion is concerned) from their very superior intelligence.* They are all doing "very superior" to "average" school work and would doubtless continue the same record if accorded the extra promotions warranted by their I Q. The reluctance of teachers to give such promotions is probably due both to inertia and to an unwillingness to part with exceptionally satisfactory pupils.

Turning now to those who have an I Q of 80 or below, we find 42 children with two-thirds to four-fifths intelligence. Of these, only 2 are in the grade where they belong by chronological age. Both of these were doing "very inferior" school work and neither was promoted the following year. Six of the 42 are only one year retarded. Supplementary data are available for only 4 of the 6. Two of these 4 are doing "very inferior" work, 2 "inferior" work. Of the 18 retarded two years, supplementary data are available for 11, 4 of whom are said to be doing "average" work, 4 "inferior" work, and 3 "very inferior" work. Of the 16 retarded 3 years or more, we have supplementary data for 10, 3 of whom are doing "average" work, 4 "inferior," and 3 "very inferior." It is interesting to note that 2 of the 3 who are doing "average" work are 4 years retarded: one being 13 years old and in the third grade, the other 14 years old and in the fourth grade. This is what we should expect of high grade feeble-minded children of 13 and 14 years.

The above is suggestive as indicating what three-quarter intelligence can do. A child of this degree of deficiency is usually 2 to 4 years below grade for his age, and his work is usually "inferior" or "very inferior." Rarely is he found in the grade where he belongs by chronological age and he never does better than "inferior" work there.

To summarize our results bearing on the relationship between grade progress and I Q, we have found:

1. That the range of distribution over the grades by mental age, though somewhat less than that by chronological age, is unjustifiably great.

2. The wider disagreements between the I Q and the grade status of the children are confined chiefly to those who are superior to or below the average in ability. The explanation for this has been found in the fact that the tendency of the school is to promote children by age rather than ability. Those who have an I Q between 96 and 105 are hardly ever more than one grade removed from the location which is normal to their mental age.

3. The child with two-thirds to three-fourths intelligence (I Q 65 to 75) never does satisfactory work in the grade where he belongs by chronological age. After the age of 8 or 9 years he is usually found doing "very inferior" to "average" work in a grade two to four years below his age. Retarded by chronological age, by mental age he is actually accelerated.

4. The child with an intelligence quotient of 120 or above is rarely found below the grade for his chronological age, and occasionally he is one or two grades above. Compared to his possibilities, however, the child of exceptionally superior intelligence is almost always retarded. Wherever located his work is nearly always superior, and the evidence suggests strongly that this superiority of school work would continue even if extra promotions were granted.

ARE CHILDREN OF GENIUS USUALLY DEFECTIVE OR QUEER?

It is commonly believed that bright children are especially likely to be one-sided, nervous, delicate, morally abnormal, socially unadaptable, or otherwise peculiar. We have secured from teachers rather extensive information on these and other points regarding 31 children having an intelligence quotient of 125 or above.² This degree of intelligence is possessed by only about 2 children out of 100, and is about as far above average intelligence as feeble-mindedness is below. The facts regarding these children, according to the testimony of their teachers, are as follows:

1. *Ability special or general.*—In the case of 20 out of 31 the ability is decidedly general, and with 2 it is mainly gen-

² The data here presented represent a portion of a larger study of talented children.

eral. The talents of 5 are described as more or less special, but in only one case remarkably so. Doubtful, 4.

2. *Health*.—Fifteen are said to be perfectly healthy. Thirteen have one or more physical defects. Four of the 13 are described as delicate, 4 have adenoids, 4 have eye defects, 1 lisps and 1 stutters. Of the 4 delicate children, 1 has kidney disease, 1 digestive trouble, and 1 has been threatened with tuberculosis. On the whole, the health conditions appear to be fully up to the average for non-selected children in the schools.

It should be pointed out, too, that most of these children are from superior homes and that for this reason their physical defects would naturally be better known than would be the case with children from inferior homes.

3. *Studiousness*.—"Extremely studious," 15; "usually studious" or "fairly studious," 11; "not particularly studious," 5; "lazy," 0.

4. *Moral traits*.—Favorable moral traits only, 19; one or more unfavorable moral traits, 8; no answer, 4.

Children with unfavorable moral traits are as follows:

"Very self-willed,"	2
"Needs close watching"	1
"Cruel to animals"	1
"Untruthful"	1
"Unreliable"	1
"A bluffer"	1
"Sexually abnormal and vicious"	1

The last-named child is the only one with more than one unfavorable trait, and he is described as being sexually abnormal, obstinate, perverted, and vicious. It will be noted that the bad traits of most of the others can hardly be regarded, from the psychological point of view, as really serious.

5. *Social adaptability*.—Socially adaptable, 25; not adaptable, 2; doubtful, 4.

6. *Attitude of other children*.—"Favorable," "friendly," "liked by everybody," "much admired," "popular," etc., 26; "not liked," 1; "inspires repugnance," 1; no answer, 3.

7. *Is child a leader?*—"Yes," 14; "no," "not particularly," etc., 12; doubtful, 5.

8. *Is play life normal?*—"Yes," 26; "no," 1; "hardly," 1; doubtful, 3.

9. *Is child spoiled or vain?*—"No," 22; "yes," 5; "a little," 2; no answer, 2.

While the data just presented are not extensive and are subject to more or less error owing to the method by which they were collected, they suggest strongly that there is little if any ground for the wide-spread belief that genius children are more likely than ordinary children to be one-sided, unadaptable, morbid, queer or physically delicate. According to the testimony of their teachers *such children are fully as likely to be healthy as average children; their ability is far more often general than special, they are studious above the average, really serious moral faults are not common among them, they are nearly always socially adaptable, are sought after as playmates and companions, their play life is usually normal, they are leaders far oftener than other children, and notwithstanding their many really superior qualities they are seldom vain or spoiled.*

Are we not justified in concluding that it would be greatly to the advantage of such children if their superior ability were more promptly and fully recognized and if (under proper medical supervision, of course) they were promoted as rapidly as their mental development would warrant? Under the present regime, when such children attain their highest possibilities it is more often in spite of the school than because of any special help or encouragement they receive from it. Even genius finds it difficult to survive when held over-long to tasks that are too easy.

Mental hygiene demands such an observance of the laws and conditions of mental activity as will promote the highest functioning which is possible without injury to the mechanism involved. The data presented suggest that these laws are frequently transgressed in the educational treatment of exceptional children. On the one hand, children of low-grade intelligence are promoted beyond their power to do. It is altogether probable that the wide-spread agitation against the evils of retardation has carried us too far, or rather that it has carried us in the wrong direction. Instead of developing a differentiated course of study which would allow dull children to make steady progress without becoming retarded we have too often promoted them to tasks which for them are impossible of accomplishment. The inevitable result is apathy and discouragement, or else over-pressure.

Bright children, on the other hand, are almost always under-promoted. They are rarely given tasks which call forth their best ability, and as a result they run the risk of falling into life-long habits of submaximum efficiency. These, too,

should be given the advantages of a differentiated course of study. There is probably little ground for the common fear of over-pressure in the training of such children. The sub-normals are more in danger of over-pressure; the super-normals of under-pressure. In the interest of both groups, mental hygiene demands that researches be undertaken for the purpose of ascertaining more definitely what performances may rightly be expected of 75 per cent. or 125 per cent. intelligence at the various age levels.

DIFFERENTIATION OF THE FIELD IN UNIVERSITIES, COLLEGES AND NORMAL SCHOOLS IN THE TRAINING OF TEACHERS

By A. W. TRETTIEN, Toledo University

The question of the differentiation of the field in the training of teachers is a very living issue among educational institutions today. It is, as it were, the culmination of the development of three-quarters of a century in the attempt at training teachers professionally.

The movement began with the impulse that sprang from the German influence in training teachers in the normal schools of New England that offered a year's course in the elementary branches to young people who had attained the age of at least sixteen years. On completion of the course the licentiate was equipped to teach the studies required by law to be taught in the elementary schools. These primitive normal schools were the joint product of private and public liberality; both citizens and legislatures sharing in the responsibility of founding them.

This normal school idea spread rapidly into the western states. Lexington was established in 1839; Albany, N. Y., in 1844; Ypsilanti, Mich., in 1852; Normal, Ill., in 1857; Oswego, N. Y., in 1860; Emporia, Kansas, in 1864; Platteville, Wis., in 1866; Cedar Falls, Iowa, in 1876. These schools, and others established subsequently, conformed, in general, to the Massachusetts type. They admitted pupils of varying degrees of preparation, offered a four year's course in the common school branches with advanced secondary school subjects, together with general psychology, history of education, general and special methods and management.

As the public school system expanded with a fuller development of the elementary schools, the kindergarten, and the public high schools, two lines of development occurred in the training of teachers. Colleges and Universities which had for centuries sent out their graduates and under-graduates to teach in lower schools, now began to add, in addition to the courses in the liberal arts and sciences, courses in general psychology, history of education and pedagogy for those who might choose to teach. Iowa, Michigan, Wisconsin, Missouri and Kansas were among the early universities to

establish such departments of pedagogy. There was, however, as yet no differentiation in the legal requirements of teachers. With the increased number of public high schools proper articulation was made with a two years' course in the normal schools, and some of the more ambitious schools took a second step by adding a third and a fourth year to the course thus establishing the "Normal College," and granting the degree of Bachelor of Pedagogy.

Cedar Falls, Iowa, began with this course in 1876; Ypsilanti, Michigan, added the course in 1897; Albany, N. Y., in 1890; Emporia, Kansas, in 1907; and many others have followed this same course. This expansion of the secondary schools was met, at the same time, in the colleges and universities by the organization of schools or colleges of education, so that today every first class university and college in the country maintains a co-related department or a separate school or college for the training of teachers. While the normal schools have sent some of their graduates to teach in the smaller high schools, the general tendency has been to prefer college and university graduates, even with limited pedagogical training, in the more advanced high school positions. The National Educational Association through its committee of seventeen has established its position that teachers in secondary schools should have a college or university education. The North Central Association of Colleges and Secondary Schools places the minimum scholastic attainments of teachers of academic subjects in secondary schools equivalent to graduation from a college belonging to the Association.

Professor Thorndike's study of the number of years spent by secondary school teachers in training beyond the elementary school in the country at large shows, in the main, eight years.

In the light of this brief historical survey and the increasingly differentiated field of education, what is the most feasible plan for the training of teachers for public school service,—feasible from the standpoint of efficiency and economy? All will admit the fact that the field of education is becoming increasingly more complex and differentiated. The equipment, the personality of the teacher, the nature and purpose of the subject-matter, the method of instruction, and the knowledge of child-psychology of the high school instructor will differ essentially from that of the kindergarten, the elementary teacher, the supervisor of general or special fields and the rural school teacher, if the highest efficiency is sought. In the elementary school the subject-matter is elementary and remains fairly constant in its emphasis upon the

fundamental facts and processes for the training of citizens in a democracy. The method of presentation must vary according to the class of children taught. The teacher's real problem is to understand the child's life and mind to such an extent as to employ the best method in directing the child's fundamental interests. The teacher of the adolescent youth, however, has the added responsibility of leading the youth to a discovery of self and self mastery in relation to his subject-matter. The secondary school teacher needs to possess a vastly broader knowledge of the subject-matter he wishes to teach and its bearing upon the immediate life interests of the youth. The stage of culture represented by the high school youth requires a different method of approach for the best results. What is the solution?

Two possibilities present themselves. First, that the normal schools extend their courses to become the training schools for all teachers in the public school systems. The second, that the work be differentiated among universities, colleges and normal schools, and each be restricted to the field for which it is best equipped to render most efficient service. The success of the first plan, the extended courses in the normal schools may be judged, in a measure, by the number of students who have in the past remained to take the added work for the normal college degree in those schools in which it has been offered.

Ypsilanti during the first eleven years of the existence of the normal college from 1897 to 1908, with an annual enrollment of over 1300, had but sixteen enrolled in the third and fourth years; of these eleven were in the third year's course leading to the degree of bachelor of pedagogy, and but five in the A. B. course.

At Albany Normal College, which was designed to be the State Normal College for preparing teachers for secondary schools, the situation was similar. Commissioner Draper expressed regret in his annual report that, while the Albany Normal College was designed to be potential in preparing teachers for secondary schools, superintendents and other supervisory offices, it was to his regret that this hope had not been realized.

The Iowa State Normal School at Cedar Falls granted twenty-two A. B. degrees during the first twelve years of its existence.

In the State of Kansas, with an enrollment in the normal school that is nearly equal to that of the entire university, the situation is similar. The number of teachers in the high school in that State in 1911 who had received their training

in the university was 257, of this number 221 were teaching in first class, 33 in second class and 3 in third class high schools. The number of high school teachers who had received their training in the State Normal School was 207. Of this number 132 were teaching in first class, 52 in second class and 23 in third class high schools. It must be borne in mind that the University of Kansas is one of the most conservative and retarded among universities in the matter of training teachers, and the normal school one of the best in the country. If we add to this number the 295 teachers who have received their training in other Kansas colleges the ratio changes as follows: Of this number 220 are teaching in first class, 64 in second class and 11 in third class high schools. The number who received their training in colleges outside of Kansas was 181 of which 160 were teaching in first class, 13 in second class, 8 in third class high schools.

Judging from these facts, the plan of extending the normal school course to include the training of the teachers for the elementary and secondary, rural and college work has not met with success. And the reason is two fold: First, the present organization of the normal school is the result of a process of social and institutional evolution, it fills a definite place in the educational system. The majority of students who attend the normal school are young men and women, mostly young women who have a rather definite purpose for attending. It is distinctly a professional school. Second, other institutions have developed to serve society more efficiently in other ways and we are led to consider the second plan.

The plan of proper articulation between the normal school, the college and the university is the only feasible alternative that can be considered in our present state of institutional organization,—feasible from the standpoint of economy and efficiency.

In considering the functions of the various institutions it is not my purpose to state whether this or that institution should have a course that should offer one, two, three or more years beyond the high school. That will be determined, to a large extent, by the way in which it meets its functions, and the state which it serves.

The function of the normal school according to its history and development, according to the personnel of its faculty, the student body and constituency, the course of study and curriculum, the methods of instruction and equipment of library and laboratory, is that of training teachers for the kindergarten, elementary, rural and grammar schools. This

without doubt is the biggest problem in education today, and if the normal school will place its emphasis upon this distinct field of work in an artful way, it will have one of the largest and most important fields in the service of humanity. We have still much work to be done before we shall cease sinning against child life in our elementary schools. Let him who doubts this statement observe the results in the physically deformed, the anaemic, the backward, listless and indifferent children who plod their weary way from grade to grade without zest because the teaching is not alive to their needs; or those who drop by the wayside as failures, or those who escape in open rebellion and play truant to become the incorrigibles upon the street, a menace to their homes and to society.

One of the greatest pedagogical needs today is that of developing an art and technique in elementary education that shall meet the needs of every child at every stage of development and then to train those who are to teach him. This is the unique field of work for the normal school, here it is without competition. This will be the economical plan because the most efficient.

But the training of teachers for elementary and rural schools implies a second function. With the demand for greater efficiency in teaching a new conception of a more efficient system of supervision of elementary schools and school work is needed. While it is true that we need to train expert kindergarten, expert primary and expert grammar grade teachers, they need expert supervision with whom to counsel and advise for the purpose of eliminating waste. We need also to apply new principles and processes for greater efficiency. The supervisor needs to be trained especially in the principles and practices of education, and in school administration as based upon the laws of child growth, development and hygiene in order to enable him to observe and to direct constructively the work of his teachers. He must have organized the subject-matter for every grade according to the principles of genetic psychology and hygiene of development in terms of which he must measure his results.

Another function of the normal school is to keep in close touch with the problems that are continuously arising in its field. It must send out its experts to study local conditions and needs, to adjust its curriculum to meet these needs, and to enlighten the public in matters of organization, legislation, administration and child-welfare. If the normal school attempts more than this under our present conditions, it will of necessity neglect its own field, and be compelled to increase

its equipment to duplicate the college or university plant in library, laboratory and instructional force, and this under present conditions is not feasible.

The first function of the college and the undergraduate departments of the university in the training of teachers, according to our present professional standards, is that of preparing departmental teachers in the secondary schools, normal schools, colleges and universities. The academic courses required for this work are a major subject and two allied minors. The minimum requirements in pedagogical courses that will best meet the needs of this class of students are adolescent psychology, hygiene of development, principles of education, special methods of the subjects the candidate expects to teach, and observation and practice work.

The greatest problem in the training of teachers for secondary schools today is that of developing in the candidate an appreciation of the nature of the young adolescent and the proper relation that the subject-matter bears to youth. Too often the college or university teacher thinks of subject-matter alone and holds a haughty aloofness toward anything that suggests a method of teaching his subject to young people of school age.

He may even pride himself upon the fact that he himself has method to teach, be it wise or otherwise. This is only too apparent when he attempts to conduct a class of would-be teachers in the special method of his subject or in directing the work of a practice teacher. At any rate the young candidate attempts to teach high school pupils as he was taught in college and the results are disappointing. Hence the young teacher needs to understand the adolescent mind, he needs the technique of his special field of culture; these can only be acquired after a thorough course in the subject itself and in addition properly articulated pedagogical courses. California is right in requiring one year of graduate work for the teacher's certificate for high school work. A second class of students will be found in every college among those who expect to teach the technical educational subject or to do administrative work. This class will need to major in the general field of education, including a broad course in the academic subjects, but especially in the fundamental courses bearing upon human growth and development, social organization, education psychology, technique of teaching, school hygiene and administration; a general course in the study of retarded and exceptional children and practice teaching. This course as suggested will require at least one year of graduate work, better two, and can therefore only be

offered by such institutions as have the faculty and equipment to do graduate work.

But there is still another service that the university must render in the field of education. There are many problems in education that are pressing for solution, problems of hygiene, of administration, of adjustment of the curriculum, of social welfare, of vocational guidance, vocational training, of retardation; even the old problems of co-education and special methods of instruction and discipline are far from a successful solution. Then there are new fields that are being exploited in determining greater efficiency in instruction as well as in institutional organization; new studies in biology, physiology, sociology, psychology and ethics that have a direct bearing upon educational principles and methods. All these studies must be reorganized and made available for the practical teacher and school administrator. This research work requires quite a different type of mentality from that of the teacher in the elementary or the secondary school or the administration officer. It is, however, one of the essential parts of our training equipment of today. To this class of educational experts belong the problems of special investigation bearing upon agricultural, industrial and professional training; reorganization of the geographical units and their supervision; consideration of needed legislation; special study of the psychology of exceptional children, subnormal, retarded, wayward and exceptionally gifted children and a suggestive course of training outlined for each. Such a course would require two or three years of graduate work, and would naturally lead to the higher or service degrees.

In a democracy such as we have in America, where the state and church are separated, the college has a distinct function and that is to offer courses in religions, literature and religious psychology and pedagogy that shall prepare teachers of religion and morals. This is not the place to discuss the question whether morals can or cannot be taught directly. Religion and morals are attitudes of mind that rest upon the same psychological processes as do mathematics and science. And a knowledge of these can be developed in the growing youth that will shape his life career and cause him to succeed or a lack of them may cause him to fail. One of our great educational awakenings of the present time is the value and efficiency of the moral life in all callings. Biology, neurology, sociology, psychology and history of morals all teach this. The home, the schools, the Sunday Schools and the churches need a thoroughly organized course of study for the teachers. The college is unique in its organi-

zation to serve in this respect. Teachers of the first rank of ability and training are needed today in every community.

The college organized upon the independent foundation has an opportunity to serve the public that is not offered even by the state institutions. An ancient philosopher said that the state cannot lift itself, but the uplift must come from private initiative. The great movement in the training of teachers in colleges and universities was not initiated in the state institutions in this country. Clark, Chicago and Columbia Universities, upon private foundations, took the first advanced steps in organizing thoroughly scientific courses in Education. They are pioneers in research work. They are more independent to move forward unhampered by a tax paying and a politically organized constituency.

Finally, one more consideration. In the past there has existed in many parts of the country a spirit of triangular rivalry and jealousy between the normal school, college and university that has been as unprofessional as it is an obstruction to progress. The new order in social organization is differentiation in function according to efficiency in service. This means a recognition of differentiated functions and co-operation, not competition. It means staff organization based upon principles of social efficiency instead of line organization based upon authority of a dictator. This is the new organization in our more efficient school system with an expert in every field whose ideal is efficient service. It means a new day for educational progress in which each will render the best service for which his talent has fitted him.

THE HUMANISM OF ROGER ASCHAM

A QUANTITATIVE STUDY OF CLASSICAL REFERENCES IN ASCHAM'S *Scholemaster*

By HERBERT PATTERSON, Dakota Wesleyan University

Roger Ascham was one of the greatest humanistic educators during the Renaissance period. His book—*The Scholemaster*—has received much attention, not only because of its intrinsic worth but also because it is a representative treatise of the English humanism which was current in the latter part of the sixteenth century. A modern educator says of *The Scholemaster*: "It is one of the most representative of Renaissance writings in England, one of the most typical works of the time in English literature and one still of real importance in its view of the early teaching of the classics."¹ Any study, accordingly, of *The Scholemaster* is not altogether particular in its value and confined to the work of Ascham, but refers, in a general way at least, to that group of educators called humanists of which Ascham may be regarded as typical.

It is a commonplace to say that the Renaissance humanists greatly emphasized the importance of classical literature in education. Anyone who has read the works of these men is well aware of their habit of referring repeatedly to Greek and Latin writings. To take a typical book, such as *The Scholemaster*, and to make a quantitative study of the classical references found in it, gives, however, a more vivid and concrete flavor to one's knowledge, even though it may add little, if any, information of an entirely new character.

The following tables embody the results of a careful study of the names of persons to whom reference is made in Ascham's *Scholemaster*. They exclude entirely the names of books, but include every mention that is made of persons.²

¹ Foster Watson, in Monroe's Cyclopedia of Education, Vol. I, p. 247.

² The text used in this investigation was that edited by Edward Arber, pub. by D. C. Heath & Co., 1898.

TABLE I.—*Names Occurring More Than Once, Together with the Exact Number of Times Each Name Occurs*

Cicero.	135	Plutarche.	3
Plato.	59	Hesiodus.	3
Homere.	39	Polybius.	3
Aristotle.	34	Lysias.	3
Demosthenes.	27	Achilles.	3
Socrates.	24	Sulpitius.	3
Terence.	22	Laelius.	3
Salust.	22	Catullus.	3
Horace.	21	Plinius Secundus.	3
Virgill.	20	Augustus.	3
Plautus.	20	Robert Sackville.	3
Caesar.	19	Tho. Smithe.	3
Xenophon.	18	J. Mason.	3
Isocrates.	18	Pope.	3
Quintilian.	18	S. Paul.	3
Varro.	16	Eobanus Hessus.	3
John Cheke.	15	John Whitneye.	3
Christ.	14	William Peter.	3
Queen Elizabeth.	14	Doctour Readman.	3
Sturmius.	14	Menander.	2
Thucydides.	12	Basileus.	2
T. Livius.	12	Apelles.	2
Ulysses.	10	Theopompus.	2
Sophocles.	9	Philip.	2
Euripides.	9	Plinie.	2
Watson.	9	Ovid.	2
Crassus.	8	Scipio Africanus.	2
Seneca.	7	Ennius.	2
Melancthon.	7	Perionius.	2
Dionys. Halicar-		Pompeius festus.	2
nasseus.	7	Fuscus.	2
Erasmus.	6	L. Plancus.	2
Pindar.	5	Talaeus.	2
Petrarche.	5	P. Victorius.	2
Aeneas.	5	G. Budaeus.	2
Antonie.	5	Whittington.	2
Cato (elder).	5	D. Wotton.	2
David.	5	John Astley.	2
Haddon.	5	Hall.	2
Nico. Medcalfe.	5	Luther.	2
Richard Sackville.	5	Darius.	2
Barthol. Riccius.	5	Cyaxeris.	2
Aristophanes.	4	Calidius.	2
Herodotus.	4	Calvus.	2
L. Crassus.	4	Horman.	2
Cyrus the Great.	4	Walter Mildmaye.	2
Brutus.	4	Sampson.	2
Atticus.	4	Lord of Surrey.	2
Scaevola.	4	Henr. Stephanus.	2
Macrobius.	4	Sambucus.	2
Chaucer.	4	Ramus.	2
Longolius.	4	Tho. More.	2
Osorius.	4	Bocace.	2
Aeschines.	3	Scipio.	2

TABLE II—*Names Occurring But Once*

Aeschylus	Dionisius	Moses
Antisthenes	Sir Anto Denys	Machiavel
Aemilius Probus	Dion. Prussaeus	Lord Maior of Lon-
Alcybiades	Dormous	don
Afranius	Donatus	H. Matreuers
Andocides	Duns	Nicasius
Aphthonius	Euclide	S. Nicolaus
Agesilaus	Ephorus	Th. Norton
Andration	Epeius	Origene
Aesopes	Eunomius	Omphalius
Actius	Elmer	Oedipus
S. Austen	Edward	Piso
Molo Appollonius	Senese Felice Fig-	Pallas
Antonius Triumvir	lincci	Panaetius
Ariostus	Francis I	Pericles
S. Augustine	Ca. Graccus	Pygius
Bellaeus	Tib. Graccus	A. Pollia
Bembus	Galene	King Philip of Spain
D. Brutus	Jane Grey	Palingenius
Syr F. Bryan	Goodricke	Gonsaluo Periz
S. Basil	Steph. Gardiner	Politian
Bridewell	Serg. Galbo	Th. Phaer
M. Brokke	Helvidius	Skippe
Brocardus	Hector	Carolus Sigonius
Croesus	Q. Hortentius	Sadoletus
Conon	Hermogenes	Suetonius
Cymon	Hiero	Strabo
S. Chrysostome	Th. Hobbie	Stalenus
Duke of Cleves	Bernard Hampton	Simmias Rhodius
William Cicell	Hieremie	Duke of Suffolke
Baldesar Castiglione	S. Hierome	Solomon
Cornelia	Haines	Theophrastus
Cuspinian	Iphicrates	Trogus
Celsus	Isaeus	Turmis
Sebastian Castalio	Jesus (son of Sirach)	Tomitanus
Chrysogonus	S. James	Theseus
Cerilius	Julianus Apostata	Torquatus
Crito	J.	Tacitus
Caelis	Kempes	Themistocles
Cephalus	Lycurgus	Timocrates
David Cythraeus	P. Lentulus	Timotheus
Conterus	Lucian	Tirefias
C. Crabo	P. Lombardus	Theocritus
Camerarius	Diog. Laertius	Thrasylbulus
Cortesius	Langaues	Vellius Paterculus
A. Cecinna	Lucretius	Venus
Roger Chamloer	Maximilian	Vidam
Demetrius	Miltiades	Wiat
Dinarchus	Mercurie	Xantippus
Demades		

TABLE III—*Quantitative Summary of Tables I and II*

Number of Names Occurring More Than Once (Table I).....	107
Number of Names Occurring But Once (Table II).....	146
Total of Names, Excluding Repetitions (Tables I and II).....	253
Total of Names, Including Repetitions (Tables I and II).....	1035

TABLE III—*Continued*

Greek Names, Excluding Repetitions (Tables I and II).....	78
Latin Names, Excluding Repetitions (Tables I and II).....	67
English Names, Excluding Repetitions (Tables I and II).....	65
Names Other Than Greek, Latin, and English (Tables I and II)	43
Greek Names, Including Repetitions (Tables I and II).....	361
Latin Names, Including Repetitions (Tables I and II).....	421
English Names, Including Repetitions (Tables I and II).....	153
Names Other Than Greek, Latin, and English, Including Repetitions (Tables I and II).....	100

From such data several interesting generalizations may be drawn. The first of these to be noted is the great number of references to men which one finds in *The Scholemaster*. While the book is not a large one, containing something less than fifty thousand words, there occur in it over one thousand references, and more than two hundred and fifty of these are to different persons. This means that throughout the book there is an average of one reference to every fifty words or less. In this characteristic Ascham is representative of Renaissance humanism with its breadth of reading.

Even more representative of the period, however, is the large number of classical references which appear in *The Scholemaster*. If repetitions be included, there are 782 classical references out of a total of 1035 references, which is more than seventy-five percent. The Greek and Latin classics were much studied by the scholars of the Renaissance humanistic period.

The comparison of Greek and Latin references proves interesting. Latin had been the favored language during the long ages of Mediaevalism, but the Renaissance brought with it a new emphasis upon the Greek language and literature. While one of the main purposes of *The Scholemaster* is to set forth a method for the teaching of the Latin language, it is to be noted that the number of Greek references, when repetitions be excluded, exceeds the number of Latin references, the former being seventy-eight and the latter only sixty-seven. The question may well arise: Why is it that when the repetitions are included the Latin references outnumber the Greek? The answer is not far to seek: the reason is to be found in the exceedingly large number of references to Cicero. Cicero's name could have occurred seventy-five times and still the Latin references would not have been in excess of the Greek; but when this one name occurs one hundred and thirty-five times, there is a balance of sixty more Latin references than Greek. It seems fair to say that in breadth of reference, the Greek classics surpass the Latin.

Was Ascham a Ciceronian? If it were not for the breadth

of reference to Greek and Latin classics, one would have little difficulty in maintaining that Ascham ought to be classed among the Ciceronians. One modern educator remarks that *The Scholemaster* "is so largely devoted to a discussion of method that the general impression left from the insistence on the importance of grammar is that of the narrower humanists."³ It is certainly true that his admiration for Cicero was unbounded. Note such expressions as the following: "that excellent perfitnesse, which was onely in Tullie, or onely in Tullies tyme;"⁴ "my Master Tullie, from whom commonlie I am never wont to dissent;"⁵ "Tullie whom, above all other, I like and love best;"⁶ "in Tullies tyme onely, and in Tullie himselfe chieflie, was the Latin tong fullie ripe, and growne to the hiest pitch of all perfection."⁷ With all his admiration for Cicero, however, Ascham did not fail to appreciate the value of other classical writers, both Latin and Greek. We must not overlook such remarks as these: "in Caesar onely could never yet fault be found;"⁸ "by right Imitation of the perfit Grecians;"⁹ "the divine Poete Homere;"¹⁰ "Plato also, that divine Philosopher;"¹¹ "those that were wisest in judgment of matters, and purest in uttering their myndes, the first and chiefest, that wrote most and best, in either tong, as Plato and Aristotle in Greeke, Tullie in Latin."¹² It is of interest to note that the name Cicero occurs but thirty-nine times in *The Scholemaster*, while the more affectionate name Tullie appears ninety-six times.

The statement has been made that at the time of the Renaissance Plato came to receive more attention than Aristotle, that while Aristotle was the accepted philosopher of the Middle Ages, Plato was the philosopher of the Renaissance. In harmony with this general tendency, it is noticeable that Plato is mentioned in *The Scholemaster* fifty-nine times and Aristotle but thirty-four.

The high respect in which Homer is held is evidenced by his name being the third on the list, preceded only by Cicero and Plato. It is not without significance that the name of Cicero is followed by five Greek names before another Latin

³ Monroe: Text-Book in the History of Education, p. 383.

⁴ Ascham: *The Scholemaster*, Arber ed., p. 286.

⁵ *Ibid.*, p. 296.

⁶ *Ibid.*, p. 298.

⁷ *Ibid.*, p. 299.

⁸ *Ibid.*, p. 317.

⁹ *Ibid.*, p. 288.

¹⁰ *Ibid.*, p. 157.

¹¹ *Ibid.*, p. 158.

¹² *Ibid.*, p. 237.

name appears: Plato, Homer, Aristotle, Demosthenes, and Socrates.

While a study of this type can not be taken too seriously, it is not, I believe, without value. Its interest is of course greatest to one who has read with appreciation *The Schole-master*.

BEGINNINGS OF THE SUPREME PEDAGOGY

By G. STANLEY HALL

I. John the Baptist.—Palestine in Jesus' time was extremely different from what it is now. It was a fat and fertile land, and intensively cultivated, for the ancient Hebrews had a passion for agriculture. Its diverse altitudes, which gave it a varied climate, also made it yield a vast variety of products. It was well watered and timbered and crossed by the great caravan routes between Africa and Asia. It was rather densely populated (one writer estimates five million inhabitants), although we have no reliable data on this point. It was indeed a land of plenty, flowing with milk and honey. It was beautiful and its people were very industrious. Of old it was the land promised to their fathers, and had been looked forward to through all the forty years in the wilderness. To see them established in it was the goal of Moses' endeavor, and under Joshua their blood had been poured out to take the land from the corrupt Canaanites. Throughout the diaspora and in all the captivities their soul had yearned for and idealized it. Here they had multiplied and prospered. It had been given them as a patrimony by their deity, and no fatherland has ever been more passionately loved. It had been hallowed by associations with the theocracy and the great prophets, and the memory of the splendid kingdom under David and Solomon. Thus few lands and races in history have been so closely mated.

Despite all these great advantages the people at the dawn of our era were wretched, depressed, and in misery. Some three-score years before, the Romans had feudalized the land and practically made them captive in it. Liberty was gone and there were taxes on persons, income, cattle, roads, bridges, movable property and market sales, and, worst of all, these taxes were farmed out to the highest bidders, who often sublet them and extorted more in the form of forced presents, if not by more aggressive means. These resources went to sustain the Roman courts and armies. Thus the people were kept in bitter poverty in their own land of abundance. They were in perpetual dread of their creditors and of venal judges who could enslave debtors, sell their wives and children, and even put them to death. There was thus great economic as

well as political tension and occasional outbreaks of revolt, while the strong and long repressed hope of a great deliverer, which had flamed up in the days of Judas Maccabeus (he of the mailed fist, who after ages of exile and captivity had thrown off the foreign yoke and given his people an all too brief but welcome taste of independence), had in the two centuries since this event almost died out. Not only was their kingdom lost, but their religion had reached perhaps its very lowest ebb. No prophet of note had appeared for three centuries, for piety had been almost lost in the petty rivalries of sects, and righteousness had become a lifeless thing of rigid forms and ceremonies, some of which must have made life a burden to those who tried to conform to them. It was at this on the whole perhaps the darkest hour the chosen race had ever seen that the dim but majestic figure of John the Baptist appeared.

In their reports concerning him the discrepancies of the four gospels almost reach their climax. Legends, which are very loquacious about him, differ widely and so do modern scholars. The well known paragraphs of Josephus suggest no relation between John's agitation and the work of Jesus. He has played a not insignificant rôle in pagan nature saga.¹ On the other hand, those who deny the historicity of Jesus deny that of John.² Thus divergencies, even in essentials, are far beyond the possibility of harmonization by the methods of critical scholarship. But the Baptist's psychopheme, if we may thus call the collective rank and tangled mass of tradition and literature about him, however we interpret it, constitutes an integral element of Jesusism, for without it our conception of all the first part of Our Lord's career would have to be quite radically recast. It presents, however, a most challenging and stimulating problem to the psychologist. His problem, however, is not insoluble, and his first task is to rescue the Baptist from the rôle which has, from the first, been assigned to him, of being a mere *avant courier* of Jesus. It was subsequent events that made him this. The chief factors in his psychic diathesis may be characterized with much confidence somewhat as follows:

- I. The prime motivation of his life was a passion for common, everyday, personal morality. He was an inflamed conscience, and he was also ahungered and athirst for righteousness. His *vox clamantis in deserto* was that of the categorical imperative, although, unlike Kant's formulation of

¹ Dähnhardt: *Natursagen*, 1902. Bd. 2., *passim*.

² See, e. g., B. W. Smith: *Jesus and the Baptist*. *Open Court*, 1914. p. 38 et seq.

it as pure oughtness, John applied its momentum to specific duties of individuals and vocations, telling publicans, soldiers, etc., what to do. His prescriptions were not merely negative, like the decalogue, nor did they merely gently dissuade from wrong courses like the daimon of Socrates, but they were essentially positive as well as specific: "Share your food and raiment, do no violence, accuse no one falsely, be content with your wages," etc. "Your boasted Abrahamic descent is of no avail. Your leaders are a generation of vipers." Unlike many of the prophets of old, he had no word of commiseration for his countrymen because of their subjection to an alien power. He enumerated no formidable list of their sins, made no awful indictment of general depravity, did not attempt to hearten the people by any predictions of good times coming, nor did he inveigh against the temple or its services. His tocsin call was addressed to each individual, assuming that he best knew his own sins, to change his life for the better. John was essentially an ethical revivalist, which is very different from being a cold ethical culturist. His appeal for moral reformation was direct, concise and personal. His method, too, was contagious, because the soul of the ancient Hebrews was so soaked with an inveterate sense, deeply graven in it by all their laws and prophets and racial history as they interpreted it, that all outer hardships and calamities were sent as penalties for wrong-doing, and on the other hand, that prosperity was a reward of merit. Hence their present low estate must be a measure of their sin and an index of Yahveh's displeasure. The eternal Jew gave the world the feeling, which he today finds it hard to escape, that prosperity and happiness not only belong to but express virtue, although the obverse conviction that failure and pain are the outer expression of sin, as the Book of Job describes, is hard to realize. This Kant thought proved a transcendental world where virtue and happiness and also sin and pain got together, as they must somewhere or else the deep instinctive sense of justice in the human soul is a lie and this is not a moral world. Such, then, was the "word" which came to John in the desert, and which he proclaimed, "Be good as you have never striven to be before; examine and reform your lives."

To this end he insisted it was necessary to envisage, objectify, and thus realize what is wrong in heart and conduct, and pass judgment upon it. The lips of the oracle in the soul, always present if often mute, which distinguishes between right and wrong, must be unsealed. The three great

words are, repent, confess, forsake. The Nietzschean super-moralist never regrets, still less confesses, but psychoanalysis has abundantly shown the transcendent power of just this moral therapy and even justified much in the theory and practice of the confessional. To bring a submerged complex up into consciousness is the essential first step toward evicting it from the soul. John demanded of each a moral auto-diagnosis. Not only must faults of character and conduct be realized within as such, but they must be still further alienated by telling them to one or more others, partly because the act of doing so makes them less a part of our own selfhood, and partly because the knowledge that others know our defects constitutes a potent reinforcement of our own efforts for self-betterment.

Now it is this moulting of the bad that is typified by the old rite of baptism, a washing of the body, symbolic of inner cleansing, as if sin were impurity that had accumulated from without or an eruption or exudation. Modern hygiene has shown many new associations between cleanliness and virtue, but John here struck a note that had been dominant through the whole Hebrew story and cult, viz., that of purity. Ablutions almost without number, the fire of the altar, and even the motive itself of the sacrifice, the regimen of the home, camp, temple, food prescriptions and taboos, permissible and non-permissible marriages: all these and many more were shot through with the distinctions between clean and unclean, and everything was motivated by the desire for purity, of which baptism was the outer sign and virtue the inner substance. To have revived these old echoes in the Semite soul and to have interpreted all in a purely personal and ethical sense, to have so profoundly impressed the masses that they came forward and publicly admitted their sin and committed themselves before others to reform, was a prodigious achievement and has its own moving lessons for our present faltering endeavors toward moral education and reform. The movement John started was far-reaching in every sense and was of the highest and most intrinsic significance.³ Even in Paul's time we are told of John's disciples, ten in one group, who had never heard of Jesus and were preaching their master's protevangelicum. Just what dimensions the movement he inaugurated really did attain, what it would have become had it not been superseded by Jesus, we can hardly hope to know, any more than we can what Socrates would have been without Plato. Socrates had his Xenophon but John left us

³ O. Holzmann: *Leben Jesu*. Ch. V, Johannes der Tauffer.

no spokesman, and we have no idea how much or little Jesus owed to him.⁴

2. But this fanning of the flame of righteousness in the soul is always and everywhere the one and only sound psychopedagogic beginning of every genuine religious awakening. Without this basis piety is pathological. If religion be only morality touched with emotion, it adds to the former a sense of reinforcement from a higher power not ourselves, however we interpret it. This the popular consciousness needs in order to sustain its grail-quest for purity, which languishes without it. For the multitude virtue for its own sake lacks and needs sanctions which religion supplies. The individual needs to experience an eruption of the deeper, greater, ethnic soul of his folk. By just so much as John felt this he thereby realized that he had made only a right beginning and that a higher transcendental consummation was needed if his work was to grow or even to last. Thus from some such inner sense in John's own soul may have originated the second note in his message, which the synoptists so stress, viz., that of subordination to a greater than he, who was soon to appear and finish what he had begun. Perhaps he felt that the very multitude of his followers, or at any rate the earnestness of their struggles to improve, must surely constitute an irresistible call to some mightier builder in the realm of soul to complete the structure, the foundations of which he had so well laid. Great men appear when they are greatly needed, and

⁴ Harnack (*What is Christianity?* 1910, p. 48) very briefly suggests a modern analogue to John in Fichte, which we must amplify. In 1806 the power of Prussia was shattered at a blow by the Battle of Jena. Its army, allies, industry, trade, were swept away, the country impoverished and exhausted, and its capital garrisoned by French soldiers. Its soil had never been fertile, nor its spirit practical, and its history showed more discord than unity. Its military situation, with strong nations on all sides, was the worst in history. The Teutonic stock had never known such humiliation and its future had never seemed so dark, but the inspiration came in addresses to the German nation, given by Fichte in Berlin each Sunday evening through the winter to large crowds, with Napoleon's sentries at the door and his spies scattered through the hall. He said in substance, "We have still left our strong and healthy bodies, our language, all our own, and not an agglomerate of many tongues like English, and pure blood never mixed with other races. We have our grand traditions. We have wrought out the Reformation, one of the greatest tasks the human spirit has ever achieved. Our ancestors from their tombs call to us not to let the work they died in doing be in vain. We carry the light and hope of the world. If we sink, freedom and humanity sink with us. There is one plain and only way for patriotic restoration. This is not primarily by armies or legislation, but by the slow process of national education we must begin at the bottom and rise like Bonal (in Pestalozzi's homely but most inspiring tale of the recon-

John had made this need a crying one. With the folk a new morality is liable to abort without a new religion. Individual impulses to reform need to be supplemented and reinforced by the energies that slumber in the depths of the unconscious, generic soul of humanity, to work effectively on which is the speciality of religious genius. True, some passages in John's pronouncements may give slight color to the view that John really expected the Lord himself to come to carry on his work, that His baptism of fire was an eschatological finale. But so far as his belief that he was only an inceptor of a greater movement focused in any real or imaginal personality, it was doubtless directed towards a human and not a divine being. John probably thus did share the Messianic expectations of those about him, although we do not know how definite they were and just how much his sense, if he had it, that he was only a herald, annunciator or way-preparer, was an after-thought. If John was enacting a foreordained rôle which was only a prologue to the Jesus drama, or if there was collusion between him and Jesus, then John's character loses something of its primordial inner moral spontaneity, for if he had known nothing of Jesus before He appeared as a stranger at the baptism, his own personality would seem enhanced. Unlike Jesus, John was uncouth, laconic, with a simpler and more incessantly repeated message. John did no healing. Jesus no baptism. If both were independent as well as contemporary products of the *Zeitgeist*, especially as some of the disciples of John became those of Jesus, while

struction of a decadent Swiss village: 'How Gertrude Teaches Her Children'). We must live for our children and train their bodies and minds as never was done in the world before. This has been our chief excellence in the past, our great thinkers have set the human spirit free and have lived for and in ideas and ideals. Thus our duty of duties is to realize the Platonic republic wherein the wisest ruled and racial education was the chief problem of statesmanship. Our policy and destiny must be to clarify our minds, our leaders must be priests of truth and in her pay, investigating fearlessly in all directions, and ready to do and suffer all in the world's holiest cause of science and learning. All classes must unite else the real fatherland long hoped for and long delayed can never come. If we can rise to this lofty duty men of a higher type than the world has yet known will appear." Thus Fichte, idealist and moral enthusiast, spoke and was heard, as no one had ever spoken or been heard in his race, at least since Luther. Education to him was a new dispensation of religion itself. In accordance with this appeal by far more practical men the University of Berlin was founded, education was made cardinal, the central item of national policy, Scharenhorst reconstructed the military system, almost on its present basis, Stein re-edited the land laws and the status of peasants, Jahn founded everywhere the patriotic *Turner* societies and preached again the gospel of ancient Greece that only strong muscles can make men great and nations free. It is the soul of Teutonism thus regenerated that is yet marching on.

others remained true to their master in prison, and even after his death, it follows that it was almost inevitable that the work of these two leaders must be correlated. The fact of John's early departure from the scene would naturally suggest that heaven ordained him as a fit messenger, and so by the time the gospels were composed he had become only the morning star ushering in the Lord of Day. Mark, the earliest gospel, has least, Matthew more, and Luke still more to say of subordination, while in the fourth gospel John does little save to designate Jesus as the Son of God, earth's Redeemer, who is fated to increase as he to decrease, so that he does little more than pronounce his *moriturus saluto*. Surely, too, those who heard him would not have been so moved if they had thought him merely an advance agent of another. They must have regarded him as a prophet in his own right, and their response was to his own appeal. But however great he was, his reduction to an introducer was really inevitable with the growth of the greater influence of Jesus. It is, however, time that his dynamic moralism be more or less rescued from its twilight and restored to just appreciation. Again, conversely, if his cogent lesson was taught until all interested knew it by heart; if his bow was shot, his power exhausted and his untimely taking-off was invented to mask the waning of his power, it was also an ingenious device to lay his fictive execution as another indictment against the weak and hated Herod, acting on the whim of a spiteful woman.

Very successfully launched on his career, Jesus was interviewed by a messenger from the imprisoned John, to ask if He were really the Christ. Perhaps John had not heard all that Jesus was doing, or he may have expected still greater things. Perhaps, too, there is intimation that even though Jesus be not He, his faith that there must be some other somewhere was undaunted. John's question, which was characteristically direct, Jesus did not answer as John probably wanted by a specific yes or no. Perhaps He was not yet sufficiently sure of Himself, or not yet ready to proclaim His Christhood openly. So His response was to immediately set about healing "many" sick, plague-stricken, possessed and blind, and to tell John's messengers to report to their master that they had also seen the deaf and lepers cured, the dead raised, and the gospel preached to the poor. Perhaps Jesus thought these therapeutic marvels would most impress John, who was not a healer, as John's specialty of baptism had most impressed Jesus, and that from this report he would infer the answer to his question. When the emissaries of John had gone, He

catechized His circle as to why they had been drawn to John, pronounced him the greatest yet born of woman, although less than the least in the new kingdom. While it is hard to find in this episode, as some have sought to do, any trace of pique on Jesus' part at John's uncertainty about Him, there are phrases in the narrative and after-comments that suggest a perhaps studied ambiguity. It has been said that Jesus thought John would understand reports of cures as symbols of the healing of the soul, more effective than John's cleansing baptism had been, although this acted answer hardly suggests a baptism of fire. There is certainly now a tendency to reverse the traditional view that John recognized the new therapist as the one he had predicted and died happy, and the consensus of scholarly opinion stresses the probability that John died oppressed with doubt.

Jesus is represented as being moved and seeking solitude when He heard of John's imprisonment and his death. If He had regarded John as an important coadjutor, He realized now that He was alone, and also we are told that He was perhaps in danger of John's fate, since Herod thought Him to be John come back to life. Our ignorance of John is increasingly baffling and almost exasperating. Perhaps his mission, once thought to be very short, was far longer and his work far greater than has been supposed, and perhaps Jesus was far more influenced and inspired by John than we had known. Perhaps, had John not died, his disciples would never have gone over to Jesus. Perhaps if one of John's disciples, who had never known Jesus, had written an account of the Baptist, Jesus would have been robbed of some of His chief superiorities and the contrasts that the gospels so subtly suggest would be lost. If we can infer from Luke's tale of John's birth that his parents were very old, he must have been early orphaned and had to nurse his fiery spirit alone in the wilderness. The few who doubt John's existence stress the fancied symbolism of his meeting death at the hands of the Roman soldiery, and regard it as a distinct prefiguring of the way Jesus was to die, while the ruggedness of John's person and method bring out other contrasting effects, so that he is an admirable counterfoil of Jesus. The main point, however, at this historic distance, to those of real spiritual culture, is that a composite portrait of all the records and traditions concerning John have a most impressive verisimilitude. It is so good and true to human nature that we cannot help wishing it to be historically true, and because we do so it will in fact, for all the intents and purposes of faith, always be so.

Finally, John is for us a classic paradigm of the moral

presentifier. Everything worth while is or must be realized here and now, and also in the individual. What is afar in time or place, and also what is racial, was outside his ken. The history, lineage, blood, rites, in which worths and values had come to center, were decreed nugatory and bankrupt. Everything is true and real only in so far as it can be utilized for personal, inner betterment. All else is vanity, dross, refuse, chaff. Modern biological ethics only reaffirms, and, indeed, we can never get beyond or outside this. The energized will absorbs intellect and feeling in its intentness on the present duty, and the present sucks into itself the virtue of the past and the future, as in the Bergsonian *durée réelle*. Thus man is at his highest and his best. There is no other time and place, but the present is all in all. This is the universal formula of the potentialization of the individual, and one of its chief attainments is unification of soul against all dispersive and schizophrenic influences. Our scattered powers, attainments and experiences are harmonized and consolidated, and all the partial components of self-hood are brought to bear for all they are worth and focalized upon the end in view. Just as shocks of anger and fear may wake dormant powers, summate them and dynamogenize us, leaving us better, stronger, and more safeguarded against every danger of fission of the ego, so a sudden sense of personal sin arouses every moral resource of our nature to better our lives, and to bring a new diathesis of higher moral tension. This is self-salvation, moral autotherapy.

But if this is the greatest theme in the world, the personal duty of duties, it is also the hardest of them all, and human life is in no small part made up of devising ways of distraction or diversion from it. The passion to do the other thing is inveterate, and the soul is full of schemes of procrastinations, or resolutions that abort, or truths that we put into the cold storage of symbols, of obligations that we seek to satisfy by ceremonies, of flabby reasonings and day-dreams that vicariate for achievement. Whenever the present is too hard for us, we fly for refuge to the past or to memory, or find reversion in amusement, which is abandonment to the impulses of childhood. We place form for substance, the sign for the thing it means, and easy convention for hard virtue. In our very research we are prone to accumulate notes and protocol data without the incessant mental *Bearbeitung* and interpretation they need, and lacking which they become mere learned rubbish. The intensive resistance to moral self-knowledge, self-control and improvement is the most inveterate of all. Things that ought to be done, instead of leaping to ac-

complishment, are stored up in the shadowy limbo of hopes deferred. The times or conditions are never fully ripe, and the psychological moment never strikes. Neither the self as a whole, nor any element in it, is trusted with abandon. The god of things as they are is an unknown god. Wishes and imagination grow pale and falsetto instead of being installed into living actualities. Thus the present is emptied of all meaning and value, rather than filled with them to repletion. How readily all these coward refuges from reality may become pathological in all spheres of life, psychoanalysis has abundantly shown. All these above traits of degeneration John found rife all about him, and hence the gospel that was needed and that he preached was that of presentification. Doctrines, traditions, punctilious ceremonies, are at best mere types and symbols of the one thing needful, righteousness. What is implicit in them must be made explicit. Though they seem *bewusstseinsunfähig*, they are not, but must and can be made conscious, because consciousness is essentially remedial. Awareness is always and everywhere ancillary to activity, and is incomplete without it. It is thus reorientation in the interests of better adaptation or re-education, and this is the method of change and transformation.

Thus while John could ring up the dispersed components available for reform in the individual, he must have come to feel the need of another and greater presentifier, who could summate the deeper and larger resources of the racial soul, for without the consummating work of the religious poet-artist, who is master in this field, the work of the best reformer of individual lives is prone to lapse. If John's more superficial work upon the personal consciousness consisted in taking the first step towards racializing the individual, the larger, converse work of individualizing the racial yet remained for Jesus. Self-consciousness, touched and inspired by the larger life of the race, is always expanded and swings into conformity with it in the moral life, and this is much. It needs, however, to be completely saturated and possessed by it, in order that the soul be definitively saved. Hence a greater presentifier of the racial soul must come, who can do in its domain a work analogous to that which John did for the individuals whom he transformed. Personal life experience is too limited in its resources to fully convert itself, unless the larger reserves that slumber beneath the threshold in the life of the kind or species can be rung up and turned on to advance individual initiative to a higher potential or to bring its inceptions to completeness. The new self-improvement morality must feel itself caught up and borne on as if by a larger

heteronomous power. Self-reform is foetal and old conceptions actually make Jesus an *accoucheur* of John's endeavors, symbolizing the new birth of the individual into the larger life of humanity. This presentification focuses the whole life of man into the transforming personal and universalized here and now. This was typified by John's trope of the baptism of fire, which tests precious metal and resolves all that is worthless to ash, dross or smoke.⁵

Some have conjectured that the great nabi of ethical katharsis or purgation developed a protensive, expectant anxiety as his ministry proceeded, as he came to realize that he could not complete what he had begun, and that he watched the crowds that flocked to him with growing dread lest a fit successor should not appear, realizing that otherwise his work would be doomed to oblivion, and perhaps derision, like that of many mad prophets that these sad times had produced. Again, some who, in the wake of Drews, doubt that Jesus ever lived, have gone so far as to urge that John's prediction was never fulfilled at all, and that no greater than he ever appeared, and tell us that this explains the question, hitherto baffling, why John's ministry was so brief and his design so complete. On this view the earliest and best of those we have been wont to call Jesus' disciples, were really those of John only, and after the latter had been disheartened, discredited, and perhaps imprisoned and slain as an agitator, charged with raising hopes that showed no signs of possible fulfillment in fact, they set to work, perhaps rather deliberately, either with or without collusion, to create a person and give him a career that had he appeared would have been their idea of a realization of John's hopes. On this view, the whole career and life of Jesus were, as it were, made to order, shortly before our gospels took form, to fit John's specifications. Thus with the first appearance of Jesus at His baptism, we leave the solid ground of history and fact and pass over to that of mythopeic or more or less half-conscious creation of a vivid imagination, loftily

⁵ This fire-motif, so prominent later in Jesus' eschatology, is not for John the pyrophilic Heraclitic element from which all things arose and into which the cosmos will ultimately be resolved. Nor is water-baptism merely a token of quenching the fire of either God's wrath or of man's lust. The fire-thought here means only a more drastic purification, as of precious metal from dross. Nor have we here an outcrop of the pyrophobic tendency of a keenly awakened sense of sin and guilt as now explained by the new psychology of hell. (C. F. Sparkman: *Satan and His Ancestors from a Psychological Standpoint*, *Journal of Religious Psychology*, 1912, v. 5, pp. 52-85, 163-194.) Nor is there here any intimation of the scortatory motif of hypereroticism, of which Freudians make fire always and everywhere the infallible symbol.

and pragmatically motivated. Yet others have conceived John as an invention, perhaps to give Jesus a precursor, as His ancestor David had in Samuel. Schleiermacher objected that John's message was a veiled challenge or appeal to Jesus to get him out of prison, and was chagrined that He would or could not do so. Skeptics have often raised the ominous question why, if Jesus was all He claimed to be, He let John die in prison. Following the record, however, it is no wonder, brief though the sketches of him are, that this unique figure fired the imagination, and is still so suggestive of sublime dramatic situations that the figure of the great fore-preacher has ever since attracted and inspired not only the propagators of the religious doctrine everywhere, but has left many a record on the history of art, literature, folk-tale, and even plant-lore.

One day, near the close of his career, possibly on its very last day, among the throng came a Stranger in the prime of life and of such impressive personality that even the aggressive John himself is made to shrink back in awe and at first to refuse to baptize Him, but felt rather impelled himself to be baptized by the hand of One so manifestly his superior. He did at length consent to confer his rite upon this important Visitor, only by way of submission to His command, and after Him perhaps baptized no other. If so, his function here culminated, and his office was at an end. This event marks the advent of Jesus from an obscurity which scholarship may very well despair of penetrating, into the very center of the stage of history. There is almost no authentic knowledge, although tradition and conjecture are even more voluble concerning His antecedents than concerning those of John. John's baptism meant repentance for sins, so how could Jesus take it without the implication that He had been a sinner? Hence many before and since Schrimpf have held that He at this point had not been sinless, and needed and experienced repentance and remission, like others, even though in some different degree, or on a higher plane. This we shall discuss later. Perhaps He came to John late because He had hesitated long. He would naturally want both to see John and to know at first hand the effects of his message and rite, and also His chroniclers must have felt the need of some point of contact with John vital enough to make Jesus his heir. This dilemma was well met. The implication is clearly brought out that Jesus' natural personality was overwhelmingly impressive to John, or else the latter had wondrous discernment of inner character, or rather, both effects are secured along with another one, viz., the exhibition of Jesus in a most tell-

ing attitude of subordination and humility, and at the same time of authority, compelling John to perform the rite despite his remonstrance.

Jesus entered into His part of the ceremony with a sympathetic *Einfühlung*, abandoning Himself to the influence of the moment. To be a good experimental investigator of the work of John, He must become, for the moment at least, his proselyte, and this His genius enabled Him to do, although it had to be to some degree as if by proxy, for how could a soul so pure sound the depths of the experience of the conviction of sin? Just this was, however, perhaps precisely what He wanted and did. It was at this point that His consciousness began the great work of bearing the sins of others in a vicarious way. Even if He had not sinned, He had to know how sin felt at its worst. Perhaps in His own soul here first arose something like the later theological distinction between *posse non peccari* and *non posse peccari*. If so, His baptismal experience was for others' sins, which He was to bear, and of which He perhaps here made inner confession. It also marked in His own soul a crisis such that while before He had been able not to sin, He was henceforth unable to sin, because realizing more fully what sin meant. Or else, perhaps, like Parsifal, who before meeting Gundry had been naïvely innocent, but was afterwards consciously so, Jesus may have here conversely passed over from instinctive to reasoned virtue.

The effect of the baptism on Jesus' own susceptible soul was profound, and marked perhaps the very greatest epoch in His career. He had at any rate heard much of this great soul-purgator, and desired to meet him and feel his spell, perhaps had heard that he proclaimed a greater and wondered who it was, possibly thought He might announce Himself as John was about to retire. When the sacred office of symbolic cleaning was over, and Jesus came up out of the river, His tense, impressionable soul had a vision. For His entranced imagination, surcharged with the vivid imagery of the prophets, the heavens seemed to open, and out of their azure depths something very like a dove appeared to descend upon Him, and along with this optic came also a compelling auditory impression, like the voice of God, saying, "Thou art my own beloved son." The secret and perhaps all unconscious dream wish His soul had nourished now sprang into consciousness, as if it were a veritable realization. Assuming that this occurred to Him, alone and only, *i. e.*, that the dove was entoptic and the voice entaural, He must have imparted this experience in some confidential way and hour to some-

one, and have discussed its reality and meaning. If He had experienced such a critical moment that the tame psychology of the modern toned-down mind calls illusory, it would be neither strange nor even abnormal, for imagination always, and especially in His age and land, made thought far more pictorial than now, and Oriental mentation, too, often works in great throbs and pulses when under great stresses. Whether it was all an objective miracle, an hallucination, a thought or the revival of a long fondly and very secretly cherished wish, the incident has great dramatic validity. The Ebionites thought that at this moment Jesus first became divine; the synoptists thought that He then received the Holy Ghost, perhaps prefigured by John's baptism of fire, and itself prefiguring Pentecost. The most psychological of modern Christologists, however, think it an endopsychic experience which consisted in Jesus receiving His afflatus, inspiration, or being dowered with the enthusiasm of humanity that Renan, or attaining the supernormal or erethic or ecstatic state that Holzmann, makes such a leading trait of Jesus' life and character. On this view from the rapt state into which His higher powers now deployed, He became always thereafter more predisposed toward, and at all moments nearer to, a more or less entranced state, which came to be habitual. In this experience His spirit assumed the erect posture which man's body did long ago, which Jesus' soul did here, erecting Himself above Himself in a way no less epochal for the coming superman.

II. The Temptation.—To meditate in solitude upon the stupendous problem thus sprung upon Him, Jesus felt impelled to retire to the desert, whence John had come, to brood and think it out. Meditation and introversion of soul favored in solitude, as the lives of hermits and anchorites showed, has always been a great resource of great men, not recluses, on supreme occasions when they needed to orient themselves, to find poise after shock, or seek direction from within. When this exercise and discipline is combined with fasting, it tends to give a very peculiar and specific exaltation of mind. When alone, man abstracts from all the constraints of the outer world and frees spontaneity and inner impulsion from inhibitions, and brings a state not without analogies to those that arise in the passivity that the procedure of psychoanalysis cultivates. Perhaps infantile reveries and pubescent daydreams, and vague foregleams that Jesus felt at the time of His temple experience, and such as the mother church still cultivates from the confirmation age on in the retreat, revived and came to the fore, throwing off the shades of the prison-

house or the repressions of maturity with its prosaic realities, which often cause them to grow pale. But now the dual image of the dove and the voice revived the juvenile excelsior passion for supreme excellence in all its pristine force until it seemed indeed realizable. His tender years had been haunted by the Messianic ideals of His age, perhaps most potent in the little circle in which He grew up. These were most uniquely fitted to give just the inspiration that fervid and pietistic youth craves and needs. All these experiences were not only normal but typical in kind, but were without precedent in degree. The Messianic idea was a hovering presence, marvelously calculated to appeal with tremendous energy to the inmost soul of ambitious and gifted young men. It had been Jesus' own most fondly cherished form of idealism, and from His earliest fancies had lain secretly very warm and close about His heart. Its sudden recurrence with vividness in this most exalted moment of His complete manhood and in broad daylight could see nothing else than an apparition of fate. Could He, should He, accept or rather dare He refuse it, and what were all the implications it involved? To accept it meant a life such as no other dared to live, and if He was true to its rôle and lived out the life that His race thought ideal, which prophets had so cherished and which the ancient and ardent hope of His people had made more or less definite and tangible, it meant not only supreme service and glory but certain death in the end. The call seemed indubitable and straight from the all-father of His own soul, and so to refuse it would be cowardice and treason to the Most High. To succeed would be joy and salvation to Himself and all who would accept Him. But the summons was authentically divine and so He could not fail. But stronger and deeper yet came the feeling that it was no rôle but that He was in very truth and fact Yahveh's only son, not by appointment or commission, but in His very inmost nature. He was not merely sent upon this mission and following a prescribed course of life with no outer constraint, but born in very truth the Messiah. In this thought indeed He merely learned His own true identity like the real son of a king reared in ignorance of who he was, yearning for some noble career but finding in maturity that a throne was his by right. Thus in solitude He discovered His real self and inner oracles that could not be gainsaid awoke and spoke. Other mortals galore had thought themselves divine but with no such witness and with no such plenary assurance. Thus the great affirmation was made and sealed. Jesus knew Himself for what He was and accepted Himself as veritable man-God. God did not merely come to conscious-

ness in Him but was His own ipsissimal nouminal self, and what a postulate! God is man and man is God. The transcendant is imminent. Jesus' own individual psychology is the true theology. God had been thought objective but now we have seen Him to be only the inmost subjectivity of man, individual and racial. The divine in nature as father developed the divine in man as son. Man is the only begotten son of the cosmos. Sounding all this profundity of insight, which a few mystics and seers before and since have dimly and partially intuited, Jesus reached that depth, or rather height, of insight beyond which religious psychologizing could not go. Eckerhardt, Boehme, Taule and in more rational ways Kant, Fichte, Schelling, Hegel and others, to say nothing of Oriental seers, have glimpsed aspects of what this epoch-making concept of a theanthropos or an incarnation idea really implied, but none who had thought it ever grasped it so completely and ever dared to live it out or even venture to express the great secret without reservations, for if uttered too plainly, as in a peculiar sense Feuerbach found out, to the world, which has always cried out at and clung to the need of an external God, the seer has been silenced or discredited or burned as heretic or atheist because he had become too God-intoxicated. This was the *aperçu* supreme, above all others, which Jesus here penetrated to with fasting and prayer and alone in the desert (an environment symbolic of the solitude of the soul of all who attain the high altitudes of human experience, where few or none can follow or understand). This was the conviction in which His soul, after we know not what struggle and agony at last found rest, peace and immovable anchorage as on the rock of ages. It was like the discovery of a new continent of faith, or worship at the shrine of a new deity, viz., the Holy Ghost. With this thought amidst these waste places Jesus gradually grew familiar and at home as He communed with His own inmost soul.

But now His thought must turn to the world of other men. What could be done with this great new insight so hard to grasp, so impossible to teach directly? It was far above and vastly too esoteric for the world and perhaps even for a chosen few. To utter it abruptly and entirely would mean summary fiasco and ruination. Not one of all He knew or that He could think of could see or bear it. The faintest intimation that He thought Himself divine would be deemed blasphemy or downright insanity. He knew His world and best of all His immediate family and personal entourage, and how the best type of Hebrew piety would be shocked by any abrupt avowal of His precious and unique insight! He knew how

perilous it is to go too far towards the core of religion, and that all whom He knew stood or might be ranged in varying degrees of remoteness from the great at-one-ment of spirit with the soul of the world that He had achieved, and that His only course was to inaugurate a campaign of education of a new and original type such as befitted the novelty of His teaching, and to be content if He could see in the hearts of those He could draw closest to Himself a progressive approximation to His own most precious newborn insight and conviction. Perhaps His followers would never reach this true and ultimate goal of all religions, which He had attained, but He saw that the degree in which they could be led to do so was measured on a scale of moral and religious values that reached from the nadir of blindness and sin up to a very zenith of true beatific knowledge and holiness. Thus He must probably always teach with reservations and with more or less veiled reticence for to reveal all he had seen would spoil all. Thus he must follow a program or curriculum and must be a great teacher, for if others ever were to attain His state of mind or to get near it, and profit in proportion, it would never be by the method by which He had arrived at it, viz., that of solitude, meditation and prayer, but by objective demonstration. Those whom He approached would demand a sign. They could not be taught His supreme thought directly or at first, but must be shown what He could do which they could not and thus He must arouse their curiosity as to whence His power was derived. A man conscious of His own essential divinity must give proof in object-lesson form of His superiority over others whose souls had not realized their own consubstantiality with God. There was only one possible way in His day and age of documenting the super-humanity, and that was by performing wonders or miracles which were the standard criteria of superior power to control men and the world about us.

Just at this point a doubt arose in His own mind whether He could really do this, and just then, too, the pangs of hunger from His long fasting and absorption in His theme became acute, and a thought so distinct that it seemed to Him the very voice of the tempter without seemed to say, "If you are God's son surely you have power to convert something in this wide waste into food rather than to die here like a beast. With all your newfound divinity you cannot make bread out of stones and so you are a fool or insane in deeming yourself divine and perish you surely must if you cannot eat." This

some think was a special popular touchstone of Messianity, and was deemed one of the simplest supernatural acts, as it was only an acceleration of natural processes, and if He could not meet it, not only the people but He Himself might well doubt His call. Yahveh, who had fed the people with manna and quail and later had fed Elijah, refused to feed Him. But the countervalent thought was not long delayed and the reply that formed itself, seemingly quite outside Jesus' soul but really in its unconscious depths, was "I must accept sustenance by the ways nature has already provided. The nourishment I need, famishing though my body is coming to be, is answers to my problems. It is for these solutions that my soul is vastly more hungry than for bread; to solve these problems would be meat and drink indeed, and it is my greater, higher and more insistent hunger that has and still makes me relatively oblivious of nutriment for the flesh and I will not be diverted from my pursuit of the bread of life for the race to mere lust for eating and drinking." Feeding and teaching, eating and learning, appetite and curiosity, satiety and certainty, food and knowledge, digestion and assimilation of knowledge,—these are closely related for genetic psychology, and Jesus' later miracles of feeding are symbols of His work as soul-feeder. Freudians teach that *Wonneseugen*, or the rapturous condition in which certain nurslings fall, presages ecstatic states later and that the first of each of these experiences may pass into the second, voracity being sublimated into desire for knowledge, etc., while the latter may be converted downwards into the former, as Satan in the first temptation sought to effect in Jesus. A faster, as many experiments, especially since Luciani, show, after the first few days feels no hunger and tends to introverted exaltation, and Jesus' long fast was both effect and cause of a diathesis that predisposed Him to the exaltation that some, as we saw above, regard as so important a trait of His life. The Eastern cult of navel-gazing in quest of Nirvana is a symbol of the fact that with detachment from the outer world always goes regression toward or a revival of juvenile or infantile states, as Jesus here resurrected His earlier reveries till in His state of absorption He became henceforth completely dominated by them, till bodily needs, like ties of family and the *vita sexualis*, etc., paled before the new higher life that was from now on to dominate all. From now on His life had one goal, sole, only and supreme. The ascetic Essene trend in His nature now asserted itself in the complete subjection of body to soul. Thus He here achieves immunity from every sarcois desire. In His

kingdom there must be no place for indulgence of sense. This was the first cardinal delimitation and determination of His future life on earth as God-man.

In another day-dream, vivid perhaps to the point of hallucination, he seemed to be on the dizzy pinnacle of the temple and a tempter's voice challenged Him to leap off into space and test Yahveh's fidelity by seeing whether He would suspend Him in mid-air against the laws of gravity. No nightmares are more common or painful than those of hovering and flying and in hypnagogic states we often fancy for some moments, while emerging into full wakefulness, that we can really float or fly, experiences that have various explanations which fall into three general groups, genetic, physiological and symbolic. Yahveh was aloft in the empyrean, above the mountains, and His angel messengers were unaffected by gravity, and when children's fantasy dons the *Tarnkappe*, the power to fly, the weird fascination of which is now seen in birdmen and in those who feel the charm of watching them, is one of the most universal of fascinations and even wishes. As this revery experience phosphoresced up in Jesus' brain, anemic from want of nourishment in the blood that fed it, the all-dominant *aperçu* that possessed His mind, seized upon it as a possible test, but that He thought it diabolically suggested shows that He instinctively regarded it as unfit and absurd. If angels keep Heaven's favorites from stumbling, much more will they sustain from a fatal plunge the son of Yahveh Himself. Nothing was more natural in this pre-scientific age than that Jesus Himself should crave some miracle such as had been vouchsafed to the prophets of old, not only to credit Himself to the world, but far more to give to Him complete self-assurance, especially as He was Himself uncertain whether the dove and the voice were real or only subjective. To leap off would be an immediate appeal for divine intervention, very unlike the slow process of starvation, and His inmost soul yearned for ineluctable certainty. In His eager quest of a yet indubitable sign, He is true to the deepest instinct of humanity, which has always sought plenary certainty by the best tests that the age or race knew. Discretion, however, prevailed over impulse. He realized that gravity could not be suspended to save His life and so came down from the pinnacle and took bread, wiser now by the great lesson that neither animate nor inanimate nature could be changed in His behalf, and that the laws of the physical universe are irreversible. Miracle-mongering, in the sense that these laws can be set aside, is no part of the program of the God-man. From this experience He perhaps acquired the reluctance He

so often shows to do what people thought to be mighty works. From the beginning folk-thought had instinctively associated superhumanity and miracle working, priesthood and thaumaturgy, but here according to liberal interpretations we have a new epoch-making stand. As before He had refused to recognize even hunger, save that of the soul, so now all the wonders He can legitimately perform are those in the domain of the soul. Here there are abundant powers waiting to be set free, and this master-psychologist of the kingdom within would work His magic in this domain only. Even all His healing should be psychotherapy alone, and this should be done chiefly as a symbol of a more inner psychic regeneration from the obsession of sin. His followers might not observe this suggestion and the people would clamor for physical wonders, and His closest adherents might be so penetrated with the old conviction that a superman must freely conjure with nature that they would misreport Him, but His conscience must be clear on that score and He would concede nothing to a superstition that He must be a magician to be divine. Thus His plan of life took further form. It was indeed a great temptation that He here faced and definitively put aside, a temptation the church He founded never has been able to entirely escape in either practice or belief. He could use to the uttermost every superior insight and work every miracle possible that was in fact only a natural phenomenon of a higher order, and here His already tried healing powers gave Him assurance that He could produce all the awe and reverence which those greedy to see mighty works as credentials of His divinity would demand. He would and could not seem to even try to make the sun stand still in the Heavens, like Joshua, or develop powers of levitation like Elijah or His transfigured and ascending personality was afterwards said to have done. Moving mountains, save symbolically by faith, opening a path through the sea and really walking on the water, and above all, raising the dead,—these were not in His domain. This was an immense step toward anti-supernaturalism, and placed Him far beyond a mass of current superstitions. Yahveh might still conjure majestically with the cosmos, but He would or could not. It marked a transition from the material to the psychological standpoint. If later Jesus seemed to others, or even to Himself, to control the course of outer events, or to try to do so, it was only in a residual or reversionary way, or else this temptation did not purge away quite all the vestiges of this ancient charm, which had always invested and also tempted priestcraft, and to resist the imputation of which by the people must be unremitting

to be effective. It would not be at all surprising nor any derogation to Jesus' humanity to assume that He did at periods in His life feel this old desire to be thought a magician, but the true Christian must fondly hope that seeming lapses from this standard are more likely to be due to the wonder-loving and sign-seeking recorders than to indicate real infractions of His noble resolve on Jesus' own part. His break with magic, then, was here complete. If popular superstition had fixed on some attestation in the form of a feat of strength within reach of His own power, as perhaps in the case, *e. g.*, of Theseus, Siegfried or King Arthur, He might have conformed, but to this He could not if He would. It was His Canossa and the tempter was like the flatterers of Canute before the rising sea. If He was ever later tempted to forget this, the memory of this desert experience must have murmured deterrently like the daimon of Socrates in His ear. The tempter was thus now unmasked for what he really was. "Thou shalt not seek to mislead one who is divine Lord over thee." He would and could not control clouds, thunder, rain or drought, earthquake or pestilence, though the Father, who called the universe into being, might do so. His field was man and his life and works, and His kingdom was the city of Mansoul. Here He would fight and overcome the adversary and push on even to His own dominion and free His subjects from the might of Diabolus, and then even the physical world would bloom again like a new paradise and the power of evil would be overthrown.

But there was a third and final problem, in some sense the most difficult to face. The people, as we saw, had never been so oppressed in their own land and now since Maccabeus, the ideal of a military leader, who was also high priest and head of the Sanhedrin and perhaps of a new theocracy, was warming up again in the hearts of the populace, although the strength of the Roman yoke and the futility and disaster of revolts had been most impressively taught. Still, were He really divine, perhaps even this emancipation, so yearned for, might be within His reach. With David's blood in His veins He would be no mere pretender to the kingship, and the memory of all that Yahveh had wrought in the past in confounding the enemies of His children suggested that to turn away would be abdication and cowardice. All men lust for power and splendor, and rulers and kings are prone to be drunk with this passion. Ireland has described monarchs who were simply mad with the sense of their might and insanely greedy for more, while since Max Stirner may have depicted the trend in the soul to magnify to the very uttermost the

egoistic instinct, till hyper-individuation becomes not only morbid but may make its victim an enemy of the human race. Jesus' symbolic vision here was a mountain-top so high that from it all the kingdoms of the whole earth could be seen, while the arch enemy whispered in His ear, "As God-man you can rule over all these realms as sole and absolute Lord and not be content to be supreme merely over your own race. To do so your motivation must be self-aggrandizement. You have the gifts if you have the will to reign. You would have to be ruthless, perhaps un pitying, place might above right, splendor and magnificence above inner clarity and richness of psychic life. Revere me as the god of self, and all other things befitting your universal dominion will be yours and you will be the first among all the children of men or demi-gods. You shall not serve but command all. Your throne can be the most exalted, your realm the largest and richest, your dignity the highest, your dynasty the most lasting the world has ever seen. The glories of imperial Rome will fade beside it and still more that of the age of Solomon. World empire is within your grasp and you may realize the wildest dreams of human ambition if you will dedicate yourself to the infernal precept of winning at any price, using any means for your ends, and letting selfishness in you do its perfect work." But this extravaganza, this siren song of egotism with abandon, while it would have more than realized the popular dream of political independence and a temporal kingdom in which so many Hebrew patriots, seers and even fanatics had dedicated their lives, seemed impracticable to the sound common sense of Jesus, for the Roman hold on the country was too strong and the people too weak. All these lower motivations He felt keenly, as is shown by the extreme splendor of the dominion depicted to His imagination, arousing uncensored infantile reveries. How much of His decision was worldly prudence, accepting the inevitable, making the best of a sad necessity, and how much was due to the insights of His religious genius, revealing a wealth of things still better, we do not know. Had temporal power been possible or His vision less, He might have listened to the political and military call. But probably any such program as this made no appeal to Jesus' temperament. He realized that when Hebrew nationality was at its best the people had fallen away from the true faith, and such a grand installation of their dreams would mean a fatal pride that would make them utterly forget Yahveh and His law, and exactly contravene and make nugatory all the teachings and even the spirit of all the prophets. A deeper insight thus impelled Jesus to the very opposite policy. Serve, not rule;

be least, not greatest; last, not first; meek, not proud; poor, not rich; feel sinful, not righteous; weak, not strong; be pure in soul and not merely ceremonially correct; regard God who sees the heart, and not man who sees externals; found the kingdom of God within and not without; let it develop secretly and slowly and not come suddenly with ostentation or by observation, and if need be let its citizens be recruited among Gentiles and even outcasts. If you would see its tokens look into the souls of little children, whose naïveté is rest in God and who are closer to the Divine than are adults. Its corner-stones are laid in the unconscious more than in the conscious nature of man, in the realm of affectivity rather than that of intellect. The simple life with patience and compassion and brotherly love, which is broader and deeper even than the splendid old classic friendship, loyalty and fidelity:—this is the goal and aim.

Thus the mason-carpenter who went to John, eager, yet hesitant, and perhaps persuaded to do so by His friends at the last moment of opportunity, emerged from the desert a new being, conscious and with a complete stoic cataleptic certainty of His identity with God, devoted to the greatest cause ever undertaken by any son of man, with an orientation and an outline of method of procedure, ineluctably self-dedicated to a work vastly greater even than Himself, great as He had so suddenly become, and panoplied as He now was with a few cardinal, if as yet only generic, resolutions, feeling Himself reinforced as if with the whole momentum of creative evolution of the universe behind Him, and borne along on the central tide that ever flows irresistibly on toward the fulfillment of human destiny. Of each alternative He had chosen the highest. He was wiser by abandonments of what would, could and should not be done. His field was narrowed and also greatly enriched by every refusal. He was now face to face with a definite future. If others had been inspired He was now inspiration itself personified. If revelation had been vouchsafed to others, He had achieved it in and of Himself and found it in deeper self-knowledge than anyone had ever attained. He was divine as none before or since had been, because He had become the only complete and perfect man by the realization that man is God and that therefore God is man. In attaining this ultima Thule of self-knowledge He had, as it were, graduated from the school of life, and now He must become the first great and unique teacher in it, and must radically reconstruct its curriculum so as to guide all who were truly docile along the way that He had made to the

truth He had found, and show to others the new world He had discovered. Perhaps the Christianity of the future will fittingly commemorate, as one of the greatest epochs not only in Jesus' career but in all Christendom with its 627 million adherents, this sojourn in and homecoming from the desert fully panoplied for His work. Had He not gone out to meet John, had He refused his baptism of water because He found no need of this symbol of cleansing from sin for Himself, had the vision been withheld and His mentation been less imaginal, had He returned to His brick, mortar, stone and wood-work, this would have been a very different world. Perhaps this and not even the events of passion week were the crisis of the drama. But from now on all moved toward the denouement of the last act as if with fated propulsion.

That something like this really occurred on the stage of Jesus' own soul, if we pass from the brief, bizarre, fragmentary records of the synoptists, which are like a confused manifest or patent content of a dream, which seems rather incoherent and meaningless, back and down to the underlying latent thought content of it all, we must believe because in this deeper stratum below the symbols it is all so coherent, sequential, natural and true to the nature of man's higher psychic life. It must all have been historic in this inward sense, for no man or group of men, not even the great folk-soul, could devise anything with such compelling verisimilitude. We must believe, for the truest faith is belief that all these many items which the religious consciousness has accepted so crassly and literally, although and sometimes actually because they seem absurd and preposterous, have a deeper and essentially real actuality behind and beneath the crude picture-writing of the synoptists in which we shall find, if we can only read their meaning aright, things far too great to be comprehended by those who recorded them, and so, despite their obvious efforts to be sedulously faithful to facts as they had found them, give us really only a distorted, sketchy, and often misleading *Zehrbild account*. If we can do this, we can restore to the gospels their true import and harmony. It is a striking and most happy higher power in the soul of man that, sprinkled as the record is with inconsistencies, and insignificant and perhaps affronting to modern intelligence as some of it is, the race has always been strangely fascinated with it all, as by some weird talisman which seems to consist in a profound sense of value concealed in it, and it is our task to penetrate to these precious happenings, so largely made of soul-stuff, as they really occurred in this man-soul. This in-

deed is the task of the psychology of Christianity now to gird itself to a work not unlike that of late so often and so brilliantly done in other fields, but in this inspired by the new hope that we may really resurrect the Jesus so long buried in the gospels, and then we shall fully realize how vain and fatuous are the current theories of all such scholars as now teach that no such man ever lived, but that His personality was a deliberate invention of the earliest founders of the church, or that Jesus' person was only a new version of a mythic hero of ancient Babylon, or that He was a wretched degenerate, or again, a commonplace man about whom, for reasons which lay outside Himself, a vast body of legendary lore had been gathered. To the newer, more positive view, on the other hand, Jesus was a wondrous flesh and blood man who had the deepest and truest insight into the fundamental problems of life and mind, who solved the greatest of all questions by finding the true relation of identity between man and God, and who achieved by transcendent genius and incredible spiritual labor in the highest field and with devotion unto death a reconstruction of religious faith and practice so significant that it made the chief epoch in history, morals and society, and all this by starting His followers toward the same insight He had achieved. Thus at the same time He is teacher and example and inspirer of each to realize the very best and greatest that is within himself, and to understand all that is implied in the conviction that, as Hegel said, no true man can possibly think too highly of himself. When, on His return from the wilderness, He was waylaid by the sad intelligence that John was cast into prison, He realized all the more that henceforth the work must be His alone and must begin at once.

III. *Choice and Training of Disciples.*—Before following Jesus' public career, it should be noted that the gospels give us for the most part only isolated incidents, often separated by we know not how great intervals of time from each other, and altogether accounting at the most for only a very few score of days, while of most of His ministry the text is silent. There is also the utmost diversity concerning the order of events. Some seem to be repetitions with variations. As to the length of Jesus' ministry, Clement of Alexandria thought it lasted but one year, "the acceptable year of the Lord." Keim and others who adopt this view base it largely on the fact that the synoptics mention only one Passover. The other extreme view is that of Irenaeus, who thought Jesus taught ten years and lived to be at least more than forty (John VIII, 57, makes the Jews say, "Thou art not yet forty years old"). There is a tradition also to this effect, which was long ago

espoused by Delff.⁶ Gilbert⁷ figures two years and four months between Jesus' baptism and His ascension, of which nearly twelve months was spent in Jerusalem and Judea.⁸ He holds that this brief public career was a complete unit, governed by a single purpose which did not change and with no stages of development, an old and well entrenched view but transcended by critical studies, and utterly in the face of the many psychogenetic suggestions from the text. Thus harmonists and critics have always differed hopelessly, and in the sequences here adopted we shall frankly follow in some respects another norm, viz., that of psychological probability based on stages of genetic development.

One of the most deplorable gaps is the deletion of the beginning of the public ministry. We do not know what followed Jesus' return from the temptations and the desert. Some conjecture that He was silent a while, as Paul probably was for years after his conversion, in order to get His bearings, plan His career, and prepare for it. In the three synoptists He first appears in Galilee, after an interval of we know not how long, preaching exactly the same doctrine of repentance and the immanence of the Kingdom that the Baptist had done. Few scholars follow the order of the fourth gospel that He first called disciples, performed the Cana marriage miracle, and then went to Jerusalem and cleansed the temple. If we follow Luke, He did much healing and some preaching very early in His career at Capernaum, and it was during His mission here that we have the tale of His revisitation to the home of His boyhood. Nothing was truer to human nature than that He should be inclined to compare His new, higher life with that of His adolescent stages of fore-feeling, yearning and germination. The tendency of great men often is to keep in closest contact with their youth, although we generally have an earlier stage, where fugue tendencies predominate. Thus the child seems to itself to have outgrown the narrow influences of home and wishes to push into the life of grown-ups, sloughing off the stage of immaturity and moulting its memories:—a trait exemplified in Jesus' temple visit at the age of twelve. Now this tide ebbs. The intolerableness of childish surroundings is past, and it is not wastrels, ne'er-dowells or failures that yield to this reversion impulse, to which

⁶ Die Geschichte des Rabbi Jesus von Nazareth. 1889. p. 251.

⁷ Students' life of Jesus. 1896. Ch. 6.

⁸ According to this scheme, there were two months from the baptism to the first Passover, eight from the latter to December, four to the next Passover, six to the Feast of Tabernacles, three to that of dedication, three to the resurrection of Lazarus, three weeks to the crucifixion, forty days from the resurrection to the ascension.

Goethe said he owed much that was best in him. Such revivals of the child that is always in us, and constitutes the inmost core of our being, are themselves regenerative. Conformably to this *Anlage*, we have the idyllic scene of Jesus, when His self-realization was near the point of consummation, returning to His boyhood home. The incident is itself an outcrop sufficiently dight with circumstance of the great law of progression by regression, or of the mutual rapport between genius and childish attitudes conserved, and show us how the loftiest ideals of achievement are bound up with and reinforced by reawakening *das ewige Kindliche* in us. Musing about these early haunts in a receptive frame of mind (the very opposite of the strenuous endeavoring of the desert), habit or inclination took Him, on the Sabbath, to His place in the old synagogue; and just as, according to the Jewish custom of that day, He had done in His boyhood, He again stood up to take His turn, and from the scroll-book of Isaiah read: "The spirit of the Lord is upon me, because He hath anointed me to preach the gospel to the poor; He hath sent me to heal the broken-hearted, to preach deliverance to the captives, the recovery of sight to the blind, to set at liberty them that were bruised, to preach the acceptable year of the Lord," and then sat down. As all gazed at Him expectantly, He broke the silence merely to say, "Here today all that I have read is fulfilled to you." Then the hush grew greater. Not only the gracious words, but His personal charm, the magic of His voice, the impressiveness of His person, were enthralling. Then one or more recognized Him as the grown-up boy they had known, son of the carpenter. They slowly understood that He was in a cryptic way posing to them as the One in whom the prophecy He had just read was realized, and it has even been suggested that some may have remembered youthful indiscretions on His part. The spell at least was broken. The impressive Stranger, of whose great success at Capernaum they had probably heard, was discovered as a matured boy of their own disprized community, impressing the natives, affecting a great rôle, if not, indeed, masquerading as the coming Deliverer. Their very town was almost a byword of derision, and the old-time residents had not been unaffected, in this unconscious estimate of themselves, by the proverb that nothing good can come out of Nazareth. Knowing this revulsion of feeling, and anticipating its result, Jesus said in substance, You think because I sprang from your degraded community that I need a great re-creation before I can be your teacher, and perhaps want me to show my therapy you have heard of, and this might restore me to your favor. My cures of the

body, however, are only symbols of those of sin-sick souls, and the latter I chiefly care for, and only this will I offer you for here I am only a teacher. Doubtless He realized, being in this early stage of His career and so more need of sympathy, that want of faith on their part, which was so essential a factor now, would lessen the chance of success. Healing, too, required great effort and took virtue out of Him. He was here for rest and for inner edification, and not for mighty works. He certainly realized that no great man is accepted where he grew up and his family were known, but reminds His hearers that of all the poor widows in the great three and a half years' famine, Elijah was sent to only one, and she a Gentile, and that of all the Jewish lepers the great prophet cured only a Syrian, implying that in His own return here He was only conforming to this precedent, and perhaps already implying that if rejected by the Jews, He might turn to the Gentiles. By comparing Himself to Elijah, by intimating that they were poor widows and lepers, the wrath of His hearers flamed forth with blind fury, so that Sabbath and the synagogue were forgotten, and Jesus was seized and rushed to a precipice off the hill, to be thrown down to His death. Here, however, one of His ecstatic spells seems to have come upon Him, so that, partly perhaps by asserting His prodigious strength, and partly by the awe and majesty He inspired, capped, it may be, by an impressive dazed state, the crowd quailed, drew back, and He walked majestically through their midst and took His departure forever from His own home.

Thus with John in prison, Himself celibate, abandoned by the friends and relatives of His youth, and in a peculiar sense homeless, a sense of the need of intimate companions of the new life, to carry on the great cause should anything happen to Him, as had to John, must have arisen and grown strong. This was all the more the case because Jesus felt now so fully that He had a great mission and cause. The selection of a board of disciples as a device of propaganda is no less significant for His theme, plan and race, than Plato's organization of the Academy, Aristotle's of the Lyceum, Zeno's of the Stoa, and Epicurus' of the Garden, the four great schools of antiquity, that persisted with more or less continuity for nearly a millenium. Founders of schools have a doctrine, and wish pupils with a certain gradation from novices to experts. Jesus not only had a doctrine, but, like Pythagoras and his circle, would regulate life in all its details on a new pattern and conformably to His own person, which since His attainment of the theanthropic consciousness was so sacrosanct or twice consecrated, for it was this that constituted the trans-

forming leaven of all: This God-likeness in mind was now the cynosure of all His endeavor. He desired to make the consciousness of others as far as possible like His own. He needed a little band of devoted men, utterly abandoned to Him and to His will, who should combine in themselves very diverse functions. They must be made so far and so fast as possible His own esoteric pupils and companions, whom He could instruct, and with whom He could perhaps try out His methods of exposition for a wider exoteric circle. Simple men of the people they must be, by converse with whom He could learn the difficulties of comprehension that were to be overcome in preaching to the masses. He may have hoped to feel in an intensive way with them the unique stimulus that comes from conversation, dialogue and dialectic, a form often chosen since Plato for the presentation of new truths, although if this was the case He must have been grievously disappointed, save, perhaps, with John, to whom a very persistent tradition reserves this function. He also needed advertisers or pre-announcers of both His advent to new towns in His peripatetic routes, while at the same time in some slight sense they were also, after their novitiate, to be, as John had been, fore-preachers of His gospels. He must have, too, repositories of all He was and stood for, in case He should be imprisoned like John, or otherwise snatched away prematurely by violence, who could preach and organize as Peter seems to have been best fitted to do. He never appears to have foreseen in any way the need of a scholar, systematist and church-founder among the Gentiles such as Paul became, and without whom the whole form and fate of Christianity would have been so very different that it is quite beyond the range of our possible conjecture what Jesus would have thought of Paul, or Paul of Jesus, had each known the other in flesh and blood. Some think they would have confronted each other with mutual aghastness and perhaps repulsion. Jesus seems, too, with Semitic sagacity and despite the unworldliness of His calling, to have felt the need of a business manager or fiscal agent, such as Judas became, although, as in so many lesser enterprises, here the failure of this agent brought eventual disaster. For these coadjutors twelve was a convenient number, besides being hallowed by many associations, and also it meant one for each tribe. He must keep His coadjutors perpetually conscious that their novitiate might end by violence any time, and this would spur them to more insight and independence.

Thus in another rift in the darkness, we see Jesus walking by the inland sea of Galilee, where he espied two brothers,

Simon Peter and Andrew, fishermen. He said: "Follow me and I will make you fishers of men," and on the instant they dropped their nets and obeyed. A little further on, he saw another pair of brothers, mending their nets. These, too, he called, and they straightway left all, and thus the first four disciples were recruited, apparently in a few moments, all, so far as we know, previously strangers to Jesus, and all apparently abandoned their callings with no other motive than Jesus' wish. In this bald narrative all four may have been very young, ready at the faintest suggestion of a passer-by to desert all, as on the sudden eruption of the old migratory instinct, so common in the early nubile age. The form of the narrative rather suggests hypnotization by the magisterial and staccato command which they obeyed without full realization of what they did. Doubtless they had heard of Jesus, perhaps were fascinated by the phrase "fishers of men," for they were illiterate youth of the humblest class and most impressionable. Perhaps the immediate surrender of their lives at a word was the best available test of their quality of docility, and this may have been tried on others before with no such response. Luke, writing later, doubtless felt some of these difficulties, and sought to obviate them in the slowly forming tradition, and so says that Jesus had before stepped into Peter's boat to escape the pressure of the crowds and He taught from it, thus giving token to the multitude and to the first four, before their summons, what manner of man He was. Fishers of men obviously meant captivating masses, as Jesus had just done in a figurative sense by the magic of His discourse, which prepared the way for deepening the effect His call was about to make upon them. As if to crassify still more the idea, Luke makes Him indicate the place where the brothers netted such a draught of fishes that their own boat and that of the second pair of brothers nearly sank. Peter's impulsiveness is shown by the story of the first of various later ambivalent reversals of attitude. He at first hesitated to cast his net where Jesus commanded and then when the nets nearly broke, fell at Jesus' feet as a sinful man. The symbolic nature of this supposed miracle is obvious, but the chroniclers evidently mean to indicate another psychological miracle.

Jesus at first glance knew men and needed that none should testify of them. On first meeting Peter we are told that He saluted him, saying, "Thou art Simon, son of Jonah," as if, as Bengel well says, He had a supernatural acquaintance with a man previously unknown. Thus, too, He surprised the Samaritan woman by telling her how many husbands she had

had. As Nathaniel first appeared, He said, "Behold an Israelite without guile," and when the latter asked with astonishment, "Whence knowest thou me?" He replied that He had seen him under the fig-tree, as if when he thought himself alone he had been caught doing something which was a key to his character. Thus Elijah (2 Kings VI, 8 f) knew telepathically all that the King of Syria said in his private chamber, and also that Joram had sent out men to kill him. Jesus must never fall short but always excel every analogous achievement in the Old Testament.

The same is true of the responses to His call. When Elijah called Elisha from the plough he left the oxen and ran, yet was allowed to go home and say good-bye. But Jesus does not permit any return, even to bury a father. Such alternations from the humblest to the highest callings, history and story always love to describe and even to create, as many instances that will readily occur to all illustrate. Not one, but at least five of Jesus' companions thus followed Him permanently (not merely accepted an invitation to take a walk, as Paulus urged), so that this miracle is of the coercion of others' wills at a beck or word. His knowledge of character is thus made to seem immediate, clairvoyant and infallible, and thus we see again the all-determining tendency to interpret every possible incident in Jesus' life and words in a way to make it conform to pre-existing Messianic tradition and expectation, and at every step to cap some Old Testament climax.

Of the call of Levi Matthew, the tax-collector, we are only told that at a command he rose from his seat at customs and became the fifth or perhaps sixth disciple (some think the first who had not been a disciple of the Baptist). Whether some or all of these were Jesus' traveling companions during the whole Gallilean period (often divided into three tours), until the twelve were finally sent out, we do not know, nor have we any circumstances of the call of the others in the synoptists. In the seven disciples John names, several not mentioned by them occur. The three agree except that in the place of Lebbeus Thaddaeus, Luke names a second Judas, the brother of James. Simon was renamed Cephas or Peter; a second Simon was called Zelotes; James was renamed Boanerges; there was a second Canaanitic Simon and the two Jameses, one the son of Zebedee and the other of Alphaeus. Peter's name is first in each list and of him we hear most throughout the first three gospels. Of several we know practically nothing. They may have died or been replaced, and Jesus may have been disappointed in them as

He was in Judas. His judgment in making selections may have been more at fault than appears.

It has been asked why Jesus had not chosen Nathaniel, and some think He did and renamed him Bartholomew. He was called an Israelite indeed without guile, had hailed Jesus as Rabbi, Son of God, and King of Israel, a confession both as emphatic, explicit, though perhaps quite as gratefully received by Jesus as was Peter's. It has been said that had he developed into a disciple he might have shown talents of a Pauline order. So Nicodemus, a Pharisee ruler, who came seeking by night, confessing that Jesus came from God, and who was told of the new birth, has been suggested as a better disciple than some of those chosen. The only answer to this is that possibly both these interviews, if stated in their true historic position, came too late after the twelve had already been ordained. Of others who appeared later and have been suggested by various writers as fit for the sacred college, the one most often named by expositors is the Pharisaic lawyer who asked Jesus which was the greatest commandment, and was told that it was to love the Lord with all thy heart, soul, mind and strength, and thy neighbor as thyself, that all the laws of the prophets hang on these. He replied this was true, for such love was more than all the whole burnt offerings and sacrifices. Jesus commended this answer as discreet, and declared that he was not far from the kingdom of God. Another candidate was a rich youth who had kept all the commandments from childhood, but could not on the instant quite bring himself to resign all his great wealth for the poor. Yet another was the eager Zacchaeus, the rich publican, whom Jesus chose in the tree as His host, who gave half his goods to the poor, restored four-fold to those whom he had unwittingly wronged, and to whose house Jesus said salvation had this day come. Only he was a son of Abraham, and not one of the lost whom He now felt it His mission to seek and save. Even Levi, who made a great feast for Jesus, Lazarus, and the "certain Greeks" who would see Jesus, reported by John, have been suggested. The board of disciples, although all but one were Galileans, was composed of men of very diverse types and of some we know nothing, and even their identity is in dispute. One was to be Jesus' Xenophon and another His Plato, or rather, to stand for a Platonic circle to be heard from later. The most unstable of them all was called the rock, the most treacherous was the fiduciary agent. Renan believes Salome, Joanna, Mary Magdalen and Susannah usually sojourned with the disciples and assisted in ministering to and for Jesus. Two or three favor-

ites constituted an inner coterie. All this would suggest great diversity of gifts, views and character, and we should expect that in a group thus composed, there would be jealousies and rivalries, as well as very different degrees of comprehension. Still, they were loyal until the last scene, and His personality over-towered and dominated each and all. Volkmar sought to explain away Judas' treason as a fiction devised sometime after Jesus' death, and intended to motivate the declaration of a vacancy in the apostolic college to make room for Paul and at the same time to create a character that should typify the treason of the Jews against Jesus, a view perhaps more ingenious than plausible. It is, of course, absurd to infer that some of the disciples were nonentities because we know so little about them. They were probably young (Keim thinks their average age not over twenty), chosen early in Jesus' ministry, the best of them coming over to Him from an apprenticeship far longer and closer than His had been, to the Baptist, who some opine chose his followers with a more infallible sagacity than Jesus showed in those He added of His own selection. Realizing the necessity of extending His work by this proxy method, and perhaps planning brief periods of teaching alternating those of learning at His side, after a night of prayer, ordaining them to be His associates, He sent them out to heal and preach, realizing that the harvest was plenteous and the laborers few, and pitying the multitude, who were like sheep without a shepherd. Investing them with His therapeutic power, sending them not to the Gentiles but to Israel, commissioning them to go provisionless, two by two, telling them what to wear, where to enter, when to withdraw with dignity, or with a threat to those who rejected them, He warned them of dangers, told them to be wise, harmless, what to do if persecuted and arrested, told them to proclaim openly what He had taught them esoterically, to be fearless of torture or death, ready to lose in order to find their lives, to love Him more than they did parents or children, assured them that a cup of cold water given a child would have its reward, etc. Meek though their demeanor, their doctrine would not bring peace but a sword, would divide families and test worthiness. The Sermon on the Mount, which some critics think an aggregation of passages from the logia, redacted by Matthew, was a discourse of consecration for their mission. Some hold that John never left Jesus but that Peter was the chief propagandist. If all went there were six circuits, while perhaps Jesus took another. They may have gone forth and returned several times at frequent intervals. Most place the death of John the Baptist

and Jesus' peril of Herod during their absence, and these events doubtless accelerated His activity. Briggs⁹ places the Johanine ministry to Jerusalem and Luke's Pyrean ministry here. But the very frame-work of events is uncertain. The disciples surely were with Jesus long enough before they were sent out to be well imbued with His spirits and method.

Why, beside this method of personal promulgation, Jesus never wrote, is a question asked from the earliest days to our own but never fully answered. In His time and place the scribal function was well developed, and it is hard to say why, burdened with a message so important, He should entrust it solely to novices of whose limitations He was often painfully reminded. Particularly toward the last, when His cause seemed waning and their faith faltering, why did He not appeal from the present to the future, from the twelve or even the seventy of His race, to say nothing of the larger Gentile world? To remind us that print was not discovered, writing material costly, a book easily destroyed, the dialect He used limited in range, that deeds were more important than words, as has so often been done, is inadequate. Of course He should not have converted the disciples into a scribal college. Words printed and read are inferior to those spoken and heard. Still, why did He never suggest to anyone the least secretarial function, or why did the making of a record apparently never occur to any of His followers for decades after His death? We surely cannot accept the hypothesis of illiteracy, although even were we driven to this, it should in no degree disparage our estimate of the value of the message, since there is a long line of great men, from Charlemagne down, who were not adept in the mere clerk's trick of writing. Socrates did not write that we know of, perhaps could not, or even read. Especially we must remember that books, while they preserve, devitalize and desiccate words. It is a vastly higher art to put things so they will live from ear to mouth, than to trust them to the long circuit from eye to hand. The scribbling mania, which spawns half-fledged ideas upon the printed page, has caused the world to lose much spontaneous diction, proverbial and apothegmic wisdom, because to say things that will live gives more vitality and momentum than is involved in writing. Of course Jesus might have written, had he lived on to a reminiscent stage of life, but we really have no data for discussion.

Again, if those who knew Him, including His parents, had the least intimation of His deity, why did they not treasure up some of the events, saying or miracles of His early

⁹ New light on the life of Jesus. p. 43.

life? The prophetic books as well as the psalms and Penta-teuch got themselves written, and now appears one greater and yet we are left to infer that up to thirty He did or said nothing worthy of record, or else that He did so in an environment which contained no writer. That is, if plenary belief in His Messiahship and the ability, or at least the habit, of writing coexisted in any one person near Him, it is strange that simple piety or Jewish patriotism or the love of mankind did not prompt to some kind of record. This is very different from the almost complete absence of any record concerning Jesus by non-believing contemporaries. We shall consider elsewhere the hypotheses that account for the lateness of our authentic records, but neither preoccupation with practical matters, nor the expectation of a speedy return of the Lord with an impending end, are adequate explanations. Love, enthusiasm, the pathos of a shameful death at the apex of His vitality, might suggest at least some threnody *in memoriam* or other vignette by the impulse that always prompts us, when our friends die, to say to our intimates how good, great or dear the lost one was, to console the bereaved by eulogies, etc., so that it would seem that some of these motives, perhaps more Johanine than Pauline, would have evoked a method of keeping the recollection of Him green, and ensuring its transmission from one generation to the next. The youth of the disciples may have obviated, for a time, the sense of any danger of oblivion. Some outline of His life and teaching would have been serviceable as a missionary device among the Gentiles and wherever else the Jesus cause went where its founder was not personally known. When the seventy were sent out, and especially when the apostles scattered after Pentecost to preach to different races, it would seem as though some synopsis would have been necessary. That these motives did not operate is evidenced by such glimpses of reasons for the writing of our gospels as we can divine. One of these was doubtless the fact of the accretion of legends as we see in Luke's resolve to divide between fact and fiction, and the apocryphal gospel shows us what a rank growth the mythic soil had produced. Another motive which prompted the writing of the gospels may have been, as the Tübingen School assert, to wipe out the bitter controversy between the Pauline and the Petrine factions, which these scholars think raged for a long time and almost threatened to wreck the early church, but was finally thus compounded. Both these motives would suggest a plain unvarnished and from the standpoint of the writer a critical

narrative, and a *sic et non* style. So, too, would the impulse to address doubt, skepticism and unbelief most effectively.

The first records may have been the *logoi* or sayings, with the aid of which one or more of our gospels was written, but a biography that is written backward (in the sense that the authors were impelled to write up the early life of Jesus, because Paul had proven that His death and resurrection were so important), must have been very untrustworthy. Indeed, the historic sense of these writers was weak and all genetic insight was absent, and hence they so strongly tend to reverse the order of things, putting the late early and conversely. Most critics think that the Sermon on the Mount was never given as a symmetrical discourse to an audience, as Matthew represents, but it was composed out of scattered utterances. The general effect of it is to spring upon the mind of the reader a type of consciousness which was not developed but which was ready-made from the first, as if evolutionary stages were inconsistent with incarnation theories. Hence the silence about His early manhood, adolescence, childhood, friends, occupations, special experiences, studies, longings, etc. In fact, few great lives, not even that of Buddha or of Socrates, are so utterly void of every genetic hint. For orthodoxy, if Jesus seems to show traces of development, He does so only in a docetic sense. It is exasperating to think of the kind of life that might now be written in these days of mothers' records, photographs, anthropometry, and all the countless measurements and tests, to say nothing of the best methods of modern biography. In fact, from every point of view we have to conclude that if Jesus was in any sense or degree what Christendom believes He was, the synoptic gospels, precious as they are, are wretchedly inadequate. In fact, the greater the man, the more valuable becomes the record of even a simple and Boswellian narrative. A great writer can make the humblest life throb with human interest.¹⁰ Heroes, however, do not need inspiration in those who describe their lives. The plainest, baldest and most uninspired record is in fact the best. Possibly, therefore, we are on the whole rather better off than if Levi, Nathaniel, Philip, Bartholemew or even Peter had left us our best records. The more we realize, however, the stupendous sense in which the child is the father of the man (since childhood is the more generalized type from which maturity involves

¹⁰ One of the most striking examples of this we see in both the lives of the semi-idiotic Kaspar Hauser, who became a psychological problem principally because of his sudden and unprepared appearance at the Nurenberg gate, with no clue of anything previous in his life.

decay), how the very highest object of civilization is to keep mankind young, to prolong infancy, and how in the early stages of life the individual is far more nearly co-extensive with the human race than he is later:—the more we shall understand in what a pregnant sense Jesus, whatever else He be, is the consummate apotheosis and the world's type of adolescence, and the more hungry-hearted we become for the record of the lost stages of His development. Whether psychogenetic studies will ever be able, in any degree, to fill this gap by reconstructive work, antiquarian research, or historical criticism, which have together led to many ingenious restorations in art, literature, architecture, to say nothing of hypothetical stages of ascent in animal evolution, we can hardly conjecture. But one thing is certain, and that is that the more we ponder and discern the faint lineaments and divine possibilities that loom up behind the entire gospel record, the more absorbing becomes the intimations of a life vastly greater than the gospels characterize and their writers could comprehend, the more we feel the poverty and superstition of their minds, and the more we are impelled to the conclusion that this sublimest of all lives has been very unworthily written, so that its insufficiency prompts in us the desire, as strong as if not stronger than any other motive, to rescue it from the inexpressible pathos of undervaluation, by making at least some fragment of it live again in our own hearts, wills and minds as it really was.

BOOK NOTES

Play in education. By JOSEPH LEE. N. Y., Macmillan Company, 1915. 500 p.

The author's chief aim here is to present a true picture of the child in order to reach certain practical conclusions. The first book is entitled *Play Is Growth*. It is also serious, trains for life, is related to the hungers, and we are told how advantageous it is to be a play-built animal. As to certain relations of play, those with teaching, gymnastics and work are discussed. Book II treats *The Baby Age*, and we are told there are four periods of childhood, divided by the ages of three, six, and eleven. The second is the Dramatic, the third the Big Injun Age, and the last the Loyal Age. In the first we have mother play, manipulation, construction, creeping, walking and balancing. In the second or dramatic age, we have impersonation, social play, rhythm, and in the Injun age we have a hunger for reality, skepticism, fighting, chasing, climbing, falling, nurture, sport that is near crime, and a conflict of ideas. As to the mood of play, it is purposeful and in the services of ideals, related to drudgery, means growth from within, and we are told that it is necessary to dream. In the age of loyalty, ending at fourteen, we have the instinct of ownership, the team, gang, land of leal. Then larger units of membership are discussed. There is a special section on girls and loyalty, and on boys and girls. In the apprentice age play compensates for civilization. It is a great restorer.

The practical conduct of play. By HENRY S. CURTIS. N. Y., Macmillan, 1915. 330 p.

This is intended as a text for those preparing for playground positions, and is a manual for all who have anything to do with the organization of play, even parents and teachers, so the book aims to give definite information and suggestion. It has grown out of the author's long and very rich experience of sixteen years. He treats of the movement in general, getting it started, construction of playgrounds, age, sex, equipment, swimming pools, organizer, training of directors, program, attendance, curriculum, games, festivals, discipline.

Facts in jingles. By WINIFRED SACKVILLE STONER, JR. Indianapolis, Bobbs-Merrill Co. (c. 1915). 306 p.

Here we have an interesting group of poems written by a bright, precocious girl between the age of five and twelve. They are arranged in the order of age, and were written not only by a child but for children. They are by no means a contribution to poetry or literature, but will instruct adults in showing the way the child views everyday situations, and it will also show how very easily a young girl can put facts into jingles. Those who read Mrs. Stoner's "*Natural Education*" will recall how very early Winifred learned the typewriter, which was such a help to her in spelling, composition, and ease and freedom of thought. Rhyme and rhythm certainly appear to give the youthful mind an effective mode of relating and expressing facts, and it may be that we have in these jingles important suggestions to parents and teachers as to a power not ordinarily used.

Imperial Japanese poems of the Meiji era. Translated from the Japanese by FRANK ALANSON LOMBARD. 93 + 27 p.

These translations from the Japanese, largely in praise of Emperor Meiji, show the loyalty of the people and also the desire of the translator that the personalities of the authors might be better known. They are all written by sovereigns and are very brief, so that it is difficult to reproduce their original structure of thirty-one syllables to the English ear. Rhyme is quite lacking in Japanese, and is generally disregarded as tending to detract from the essential simplicity of the verse. This means that all the poems are thirty-one syllables long. It is an extremely interesting book, by a very devoted Professor of Doshisha and Lecturer in the Imperial University, and is meant as an act of homage and reverence on his part to the royal family.

Selling. By W. A. WATERBURY, WALTER H. COTTINGHAM, and others. Chicago, A. W. Shaw Co., 1913. 196 p.

This work is compendious, treating first the underlying principles of salesmanship in seven sections by as many different authorities, e. g., training for selling, its principles and their application; the salesman as a business builder; science versus empiricism in selling; presenting a business proposition; applied salesmanship and specialty selling; enthusiasm in the work; and written salesmanship. The second part tells us how selling is effected in various lines; how the campaign wins; the falling off of sales; judging the market; selling by mail; the small mail order; how the country department store sells; publicity for the retailer. The third part deals with advantage and importance of system; selling in the store; profitable sales; the automatic follow-up; system in city and country trade.

The work of our hands; a study of occupations for invalids. By HERBERT J. HALL and MERTICE M. C. BUCK. N. Y., Moffat, Yard & Co., 1915. 211 p.

It is hard to get access to this book. There is first a prolix introduction. To reach the table of contents one must begin to cut leaves, and every time the book is opened it cracks in an annoying way.

As to subject-matter, there are two parts. The first treats of workshops in general, hospitals, manual work for patients, sanatorium treatment for people with small means, the teacher and pupil, the trained nurse, the well-to-do-patient at work, the industrial problem of the tubercular, handicapped labor and the law. Part two treats teaching the handicapped, methods, readjustment, organic disorders, hysteria, epilepsy, chorea, border-line cases, work with the aged, etc. The book is valuable and would be a stimulating one for people engaged in that kind of work, but lacks the perspective which is necessary to recommend it to a larger public.

Teaching of history in elementary and secondary schools. By HENRY JOHNSON. N. Y., Macmillan, 1915. 497 p.

The writer first discusses what history is, including methods, early ideas of it, and scientific conceptions; second, the problem of grading it. Then come questions of aims and values, its history in the school, the curriculum in the United States and Europe, the biographical approach, social study, making the past real, use of models, pictures, maps, text-books, selections, collateral reading, correlation of other topics and examinations. The work seems to be a most admirable one, the best known to the writer of this note, indeed, on the topic.

It is a great pity, but the conscientious reviewer must add that the publishers, by leaving untrimmed the front edges of the book, requiring leaf-cutting at the bottom of so many pages, have made its perusal positively irksome.

Readings in American history. By DAVID SAVILLE MUZZEY. Boston, Ginn, 1915. 594 p.

This selected material from primary sources is designed to illustrate and enliven the narrative of the text-book. The author of this collection seeks to give the student a sense of the number and variety of sources that are available, and also he frequently uses two or more extracts to elucidate the same topic. The period he covers is from the discovery of America to twentieth century problems, the Spanish-American War, Roosevelt policies, etc.

A student's history of education. By FRANK PIERREPONT GRAVES. N. Y., Macmillan, 1915. 453 p.

The writer is of the opinion that the history of education has to justify itself, and selections from it must be made with reference to specific needs, that merely historic interests or encyclopedic completeness do not of themselves justify teaching it. So the author has here rewritten his former history of education in three volumes, from a rather new angle, and beginning with the Greeks comes down to present day. An interesting and enlivening new feature of the book is the well chosen illustrations of early days and even of contemporary times, with photographs of a number of modern educators, one of whom only, President Eliot, is still living.

Fundamentals in methods in elementary schools. By JOSEPH KENNEDY. N. Y., Macmillan, 1915. 326 p.

This book is a product of the author's conviction of the poor methods and the lack of genuine efficiency in all elementary schools, both urban and rural. His experience enables him to speak with knowledge, and he wishes his book to be not a consecutive and detailed methodology, but a concretely illustrated discussion to arouse teachers to common-sense injunctions concerning things to be obeyed or avoided. Accordingly, after preliminary discussion of teachers, methods, clear picturing, the chief mistake, the recitation period, he takes up the different topics in considerable detail, including hygiene, morals and even special topics, music, nature, manual training, etc.

Problems in elementary school administration; a constructive study applied to New York City. By FRANK P. BACHMAN. Yonkers-on-Hudson, World Book Co., 1915. 274 p.

The important contemporary problems of elementary schools are here treated by the new method which deals with efficiency and problems of classification, such as those of promotion and non-promotion as related to rate, age, size of class, inability to write English, part time, problems for those who leave school, etc. Such topics as the following are discussed: what children to include in age-grade reports, when and how to take the age to make out the report, age-grade standards, the significance of over age, etc.

Himself; talks with men concerning themselves. By E. B. LOWRY and RICHARD J. LAMBERT. Chicago, Forbes & Co., 1915. 216 p.

This book seeks to state in non-technical terms the things concerning the body that should be known by every adult male, without any attempt

to dictate. The authors seek to describe simply but correctly the general anatomy of the generative organs and their most common diseases. Minute anatomy and rare diseases are omitted, but only those things which interest the majority of young men have been considered. Every man must dictate his own destinies, but he cannot judge his line of action until he knows the facts, and these it is the purpose of this book to supply. It is a judicious and temperate statement in twenty-two sections and speaks very plainly.

School hygiene. By ROBERT A. Lyster. 2d ed. Baltimore, Warwick & York, n. d. 388 p.

Books upon this subject are multiplying so fast that it is difficult to keep tab on them all, and in them there is a surprising amount of common material. There are, however, differentia in at least perspective. In this handbook we have first a discussion of the school building and the usual lighting, heating and ventilation matter is given. The second part, the scholar, is devoted to physical training and health, posture, exercises, eye, ear, throat, voice, personal hygiene, etc. Part three is on medical supervision and school medicine and surgery. Here the writer discusses the day's work, mental development and defects, common ailments, consumption, accidents, epidemics, closure, and disinfection.

Hiawatha industrial reader. By MARY A. PROUDFOOT. Illustrations by J. Allen St. John. Rand McNally & Co., (c. 1915). 192 p.

This is a unique combination by a very ingenious and successful teacher of children's interests in Indians and in industry, treating first Hiawatha's childhood, wigwam, how Nokomis made the cradle; in his youth his hunting is described, the camp, lodge, sleepy land, punishment, the first deer, the dressing of the hide, which is made the cloak. In his manhood comes his fasting, the summer festival of corn, sailing, canoeing, fishing, wooing, the wedding feast, including the maple sugar camp, the great bowl, making cups, jars, jugs, dancing in the moonlight; and finally blessing the corn-fields, Thanksgiving, making the meal, corn-bread, the harvest of rice.

Interpretation of the printed page. By S. H. CLARK. Chicago, Row, Peterson & Co., (c. 1915). 317 p.

This book is designed for high and normal schools, and especially for the teacher of English without special preparation in vocal expression, so we have chapters on group values, sequence and subordination, denotation, analysis, the central idea, punctuation, connotation and emotion. The author is himself a great master in his own art, with a personality that would ensure the highest success on the stage, had he not preferred an academic career. He is also interested in the higher psychological or philosophical aspect of his art, and is a master in analysis and in teaching.

The child; his thinking, feeling, and doing. By AMY ELIZA TANNER. Chicago, Rand McNally & Co., (c. 1915). 534 p.

All interested in child study will welcome a new edition of this book, which has already had a wide vogue. It is here very largely rewritten, so that nearly one hundred new pages are added, the bibliography is copious, well chosen and brought down to date, a number of new topics are treated, and there are various illustrations, so that on the whole it

must be pronounced, as it ought to be since it is the latest, the best of the various introductions to the subject. The new edition ought to have a still wider use as a text-book than the old has had.

Organisation and management of auxiliary classes. By HELEN MACMURCHY. (Department of Education, Ontario, Educational Pamphlets, No. 7, 1915.) L. K. Cameron, 1915. 212 p.

This unpretentious but valuable booklet discusses first the need of auxiliary classes for mental defectives and for the disabled. The history of the movement is then treated, with the Ontario act of 1914. Then come the qualification of training teachers, the auxiliary classroom and its equipment and course of study, cost of such schools, with an appendix of advice to parents, the Ontario act creating these classes, the outline of work, and some sense exercises. The book contains a number of interesting illustrations and simple diagrams illustrating speech defects.

The aims and methods of nature study. By JOHN RENNIE. Third impression. Baltimore, Warwick & York, n. d. 352 p.

This book is practical in that it reckons with the needs of the classroom throughout. After giving certain ideals of nature study and methods, the writer takes up school courses, nature study in the town, color, form and movement, exercises in description, frogs and toads, birds, mammals, shells, snails, insects, the earthworm, fresh-water animals, life in winter, plant identification, a lesson on buttercups, leaves, flowers, fruits and seeds, trees, ferns, decay, common rocks, school gardens, economics, weather study, equipment and management.

School arithmetic. Grammar school book. By FLORIAN CAJORI. N. Y., Macmillan, 1915. 437 p.

School arithmetic. Intermediate book. By FLORIAN CAJORI. N. Y., Macmillan, 1915. 299 p.

As in the author's Primary Arithmetic so in these the aim is to render the subject attractive to the pupil, without sacrifice of serious intent, to encourage self-activity, to get problems that bear on practical life so that the student may feel that his work is worth while. In the Grammar Book the chief feature is the emphasis of vocational problems drawn from the farm, home, carpenter's shop, factory, clerk's office, and a new feature is the treatment of curves representing empirical data such as variations in temperature, stock market, etc.

The future of us boys. Edited in the words of grown ups by a friend. Boston, Babson's Statistical Organization, 1915. 129 p.

This unique book treats first of the boys of yesterday, to-day and the future; why we boys are "no good" to-day; what we need; an ideal system; use of public funds; why not train our parents? The second section is devoted to simple plans to make boys useful, such as the Fitchburg plan; the Boston plan; studying industries; the Gloucester plan; what the fathers might do; what records are needed. Miscellaneous suggestions follow on the value of example, what is success, need of vocational training, and money.

An introduction to neurology. By C. JUDSON HERRICK. Philadelphia, W. B. Saunders Co., 1915. 355 p.

This is the work of an accomplished and experienced scholar, teacher and investigator. In his 137 illustrations he has given the student an

excellent idea of the general structure of the central nervous system, and his notes put the student abreast of the best authorities to date. The cuts seem not only well chosen but on the whole very well executed for the purpose, and, what is better yet, well devised and clear, so that this book easily takes rank as the first in its field for its purpose.

Practical zoology. By ROBERT W. HEGNER. N. Y., Macmillan, 1915. 495 p.

This is a high school text-book, designed to occupy a year, but with certain chapters that could be eliminated if less time were available. It is called practical because those facts and theories about animals are selected which have the most practical bearing upon the daily life of the student, not only economically but intellectually. The pictures, 325 in all, end with Darwin, Mendel and Pasteur, and are well chosen to develop the child's interest in animal life.

Rural Denmark and its schools. By HAROLD W. FOGHT. N. Y., Macmillan, 1915. 355 p.

Perhaps Denmark has helped us solve some of the problems of the rural school. The country has certainly recently undergone an agricultural rehabilitation, and the author gives a very interesting account of the work of the present rural school there and of national reorganization, with sections on elementary, agricultural and on folk high schools. The book has thirty helpful illustrations.

Economic aspects of the war; neutral rights, belligerent claims, and American commerce in the years 1914-1915. By EDWIN J. CLAPP. New Haven, Yale University Press, 1915. 340 p.

The chief topics here are the rights of neutrals, the August order in council and its effect on the export of foodstuffs, the "Wilhelmina," the blockade, its effects, the starting of the cotton movement and its stopping, copper as lawful commerce, also as contraband of war, the export and import situation, the practicability of starving Germany, and war orders.

Muscular movement writing manual. By C. C. LISTER. N. Y., Macmillan, 1915. 114 p.

This little book is written to tell us simply what are the principles upon which successful teaching of hand-writing is based, and to give definite information and direction for teaching. The importance of pedagogical methods is stressed. So is theory. There is a definite plan, and common faults are photo-engraved. Letters are classified as to their fundamental movements, etc.

Kindliche und jugendliche Verbrecher. Von LAURA GERVAI. München, Ernest Reinhardt, 1914. 144 p.

This is a valuable, comprehensive treatise on the crimes of children and youth in general. It contains chapters on suicide, the personality of criminal and wayward children and youth, and the forms, causes and origin of crime. In the end there are copious illustrative incidents given from life.

The kindergarten and the Montessori method; an attempt at synthesis. By MARTHA MACLEAR. Boston, Richard G. Badger, (c. 1915). 114 p.

This little handbook treats the Montessori method, then suggests an adjustment, discusses gifts, hand-work, music, games, stories, and

nature study. The author designs not so much to modify the Montessori system as to utilize its lessons for the kindergarten.

Life problems; studies in the native interests of young men. By L. L. DOGGETT, WILLIAM H. BALL, H. M. BURR, WILLIAM KNOWLES COOPER. Springfield, Mass., International Committee of Young Men's Christian Associations, 1906. 60 p.

This popular little pamphlet on the native interests of young men discusses problems of a livelihood, social and family relationships, physical temptation and service. It is a book of synopses by several people, revised and edited by President Doggett.

Contemporary French dramatists. By BARRETT H. CLARK. Cincinnati, Stewart & Kidd Co., 1915. 225 p.

The author gives us here a very interesting study on the French free theatre, with chapters on each of the following: Cúrel, Brioux, Porto-Riche, Hervieu, Lavedan, Donnay, Rostand, Lemaître, Capus, Bataille, Bernstein, and Flers and Caillavet.

Anarchy or order. Twelve papers for the times. London, Duty & Discipline Movement, 117 Victoria St., 1915. 125 p.

Annual report of the Board of Regents of the Smithsonian Institution . . . for the year ending June 30, 1914. Washington, Govt. Print. Office, 1915. 729 p.

Abraham Lincoln; a story and a play. By MARY HAZELTON WADE. Boston, Richard G. Badger, c. 1914. 84 p.

Second part of King Henry IV. Edited by J. H. LOBBAN. (Granta Shakespeare.) Cambridge, University Press, 1915. 192 p.

Tenth annual report of the education department, State of New York, for the school year ending July 31, 1913. Albany, University of the State of New York, 1914. 1158 p.

National Education Association of the United States. Journal of Proceedings and addresses of the fifty-second annual meeting, held at St. Paul, Minnesota, July 4-11, 1914. Published by the Association, Secretary's office, Ann Arbor, Michigan, 1914. 928 p.

The Tsing Hua Annual. Published by the students, Tsing Hua College. (For the 1915 Panama Exposition.) Vol. 1. Peking, China, August, 1914. Shanghai, Methodist Pub. House. 138 p.

First book in French. By EUGÈNE F. MALOUBIER and JUSTIN H. MOORE. New York, Macmillan Company, 1915. 363 p.

Dictation day by day; a modern speller. Seventh and Eighth Years. By KATE VAN WAGENEN. New York, Macmillan Co., 1915. 134 p.

Plane trigonometry. By A. M. HARDING and J. S. TURNER. New York, G. P. Putnam's Sons, 1915. 158 + 51 p.

Bulletin de la Société Autour Du Monde. Jan., 1915. Deuxième Année, No. 1. Boulogne-sur-Seine. 100 p.

University of Chicago. President's report, covering the academic year ending June 30, 1914. Chicago, University of Chicago press, (c. 1915). 237 p.

Massachusetts State Board of Education. 78th annual report, 1913-14. Boston, Wright and Potter Printing Co., 1915. 353 + 164 p.

The new generation; a study in the physiology of inheritance. By FRANCES GULICK JEWETT. Boston, Ginn and Co. (c. 1914). 235 p.

What shall we read to the children? By CLARA WHITEHILL HUNT. Boston, Houghton Mifflin Co., 1915. 156 p.

The survival of the unfit. By PHILIP WENDELL CRANNELL. New York, Hodder & Stoughton, (c. 1915). 203 p.

The Jews who stood by Washington. By MADISON C. PETERS. New York, Trow Press, 1915. 35 p.

The socialized recitation. By WILLIAM T. WHITNEY. New York, A. S. Barnes Co., 1915. 100 p.

Backward children. By ARTHUR HOLMES. Indianapolis, Bobbs-Merrill Co. (c. 1915). 247 p.

NOTE

At the Johns Hopkins University, the degree of Bachelor of Science in Education has been established in connection with the College Courses for Teachers and the Summer Courses. The degree will be open to men and women. The regulations concerning the work for the new degree will be determined by an Advisory Committee of the Faculty. The title of Director of the College Courses for Teachers and of the Summer Courses has been assigned to Professor Edward F. Buchner.

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